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THE FAR EASTERN REVIEW

Engineering
Finance Commerce

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SHANGHAI — MANILA

December, 1913.

B. P. L.

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THE HAI-HO CONSERVANCY

HISTORICAL SKETCH OF THE EFFORTS AND WORK ENTAILED IN PLACING TIENTSIN WITHIN REACH OF SEA-GOING STEAMERS

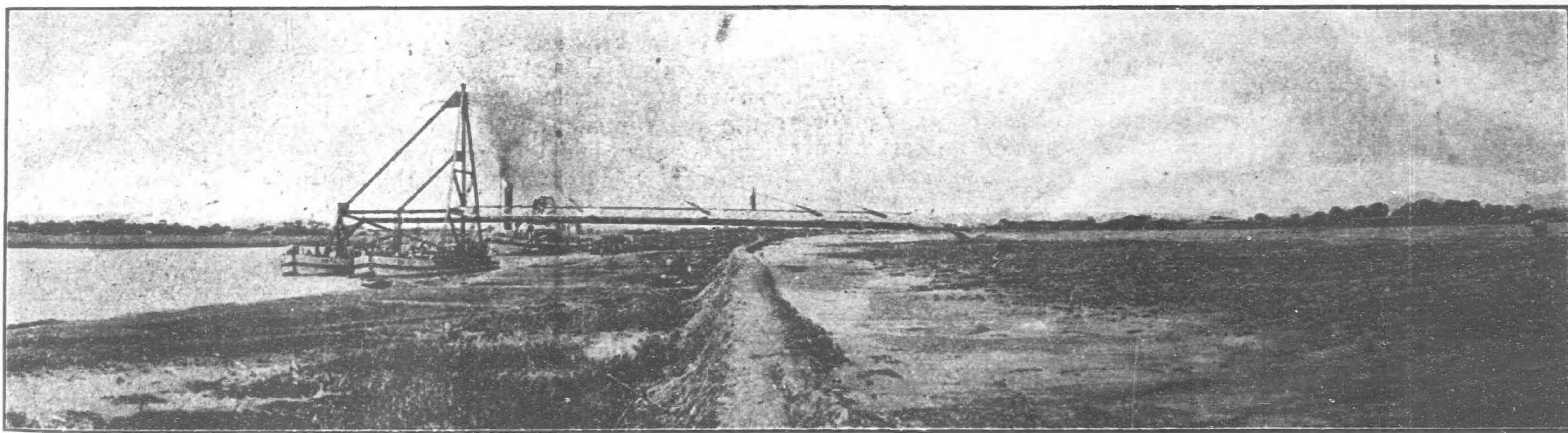
Unquestionably the condition of the Hai-Ho—the watercourse between Tientsin and the sea—has throughout the past 15 years stood unrivalled in importance among the matters most vitally affecting the commercial and general welfare of Tientsin. That the state of the river has at times seriously militated against the port's trade, and that in the satisfactory solution of this problem is wrapped up the future preservation of the port's position of commercial pre-eminence in North China, have become axioms upon the tongues of those whose interests are at stake. To cast up in sharp outline a picture of the conditions that prevailed before any remedial measures were undertaken, and to form a basis for a more intelligible understanding of the problem, it is worth while glancing rapidly over the periodical Reports upon this *bête noire* for several preceding years.

As far back as 1886, we find that up to the 27th March there was sufficient water in the river for all vessels to come up to the Tzu-chu-lin (紫竹林) anchorage—or to the Bund, in other

trouble, behaved moderately well, although during the months of July, August, and September steamers were compelled to lighter a good deal of their cargo and for some weeks could not navigate the upper reaches."

The following year—1896—was one of the worst in the history of the port. For more than seven months steamers were unable to reach the Bund, and the outlook was so serious that not only Foreigners, but even Chinese, began to take alarm. The Tientsin Chamber of Commerce then entrusted Mr. A. de Linde, who afterwards became prominent in Hai-Ho conservancy matters, with the task of making a survey on which to base plans for amelioration.

A repetition of the evil occurred in 1897, when for over six months the depth of water ranged between 5 and 8 feet only, and after March but one steamer reached the Bund. All merchandise had to be lightered to and from the Concessions, with the attendant delays and losses by damage and theft, which,



HAI-HO CONSERVANCY.—Showing Method of Excavating the Fourth Cutting

words,—but that after that date the river commenced shoaling, and all but vessels of the lightest draught were compelled to discharge their cargoes at some distance below the Settlement. This state of things continued until the middle of September, when the bed of the river again deepened and the community had once more the satisfaction of seeing an imposing line of steamers moored to the Bund.

During the summer of 1889 the Hai-Ho was said to be more difficult to navigate than during any season since the port had been opened. By the 12th July all attempts to reach Tientsin were given up, and a temporary anchorage was established at Pait'ang-k'ou (白塘口), 14 miles below the Bund, where until late in October all steamers discharged and loaded.

Throughout the earlier "nineties" constant references are found in the annual Trade Reports to the increase in the port's business in spite of the handicap imposed by the river, among them the following, for 1895:—"The Pei-Ho, our chronic local

as always, materially increased the laying-down cost of the cargo.

The sentence, "Though no steamer has been able to reach the Bund during the year (fortunately an unprecedented event)," introducing the Trade Report for 1898, tells its own story.

A SHIPLESS PORT

During 1899 the river 30 miles above Tangku was so nearly unnavigable that only two steamers succeeded in reaching the Bund that season.

So much, then, for a condensed statement of the palpable manifestations of the disease. The diagnosis and exposition of the root of the trouble were more difficult to arrive at. It was evident, however, that the problem presented was: how to dispose of—or, better, how to assist the river to dispose of—the inevitable amount of silt brought down, chiefly by the Hun-Ho (渾河), from the mountains and plains of the hinterland. The distressing rapidity with which the bottom of the river rose in some seasons

during the two worst months, July and August, and the other vagaries of this unwelcome clog on the wheels of trade, rendered impossible any sure prediction of what the conditions of navigation were going to be a week ahead. Often the high-water mark lapped far above its usual line, yet ships could not come up, because the bottom of the river had risen so much more in proportion—forcing the water out into the distributary canals and channels—that there was much shallower water than with a lower surface.

During the earlier years the river seemed better able to carry down the burden imposed upon it, and its inability to scour out in the succeeding seasons was believed to be due to the unfavourable changes in the condition of the stream between Tientsin and Taku, whereby the scouring power of the tide was greatly diminished. In 1896 Mr. Aglen, then Commissioner of Customs, Tientsin, wrote: "There are residents now in Tientsin who can remember when ships were wont to swing to the flood at Tzu-chu-lin; there is now a barely perceptible rise and fall." Certain it was that expert opinion held that the remedy lay in confining more of the water of the confluent streams within the banks of the Hai-Ho, and giving it a clearer, straighter course to the sea, so that both the current and the tide could have freer action. How this has been done will be dealt with hereafter, after the organisation of the various efforts towards conservancy have been treated.

MAKING A START

The first tangible effort to improve the river seems to have been that made in 1890, when, after the disastrous spring floods of that year, Viceroy Li Hung Chang was induced to allow Mr. A. de Linde to make the surveys on which was based the proposal by Mr. Detring, Commissioner of Customs, of an extensive scheme that contemplated an outlay of a million taels. This proposal had the great advantage, but dimly realised at the time, of beginning the conservation work before the state of the river, as regards navigation, should have become as disastrous as it since has. Although the money for its prosecution was available, this timely plan met such strong opposition from the local Chinese officials that it had to be abandoned.

Later years witnessed a change of front. In April 1897 the Native authorities had a dredger at work, from time to time, in the North-west Reach, without, however, producing any appreciable result; for what was needed, as stated above, was not the removal of silt from one or two places, but, rather, the prevention of the deposit. This a dredger could not do. Nevertheless, the attempt showed a welcome readiness on the part of the Native officials to take active measures; and an earnest of their willingness to co-operate with the Foreign community appeared in the proclamation of His Excellency Viceroy Wang Wen Shao, defining the nature and scope of the proposed works and bidding the people offer no opposition. The proclamation was as follows:

"The Hai-Ho has lately silted up to such an extent that steamers can no longer come up to the Settlements, thereby causing losses to the merchants.

"Sometime ago I discussed with the foreign Consuls the question of closing the canals and they proposed that Mr. de Linde should carry out this work, the cost of which will be defrayed by Foreigners and Chinese.

"Work will be started on the first of August, 1898. I have appointed the Customs Taotai to be the president and Chang Tajen, Wang Tajen and the Commissioner of Customs to assist him on the Board.

"All materials are to be bought by Mr. de Linde and if, when he buys the necessary land, there should be any difficulty he can report to the Customs Taotai who will appoint an official to settle matters.

"All employees must obey the Engineer or he will dismiss them at once, and if anyone tries to obstruct the work he will be sent to the Yamen.

"These river works will be finished in two, or at the most two and a half years.

"I issue this proclamation to the people living on both sides of the river and you should understand that the work is for the

good of the people and the merchants. If anyone should try to obstruct the progress of the work or create trouble he will be punished at once."

SINO-FOREIGN CO-OPERATION

This co-operation had already begun to take definite form in the negotiations which the commercial community, spurred on to activity by the deplorable condition of the river in 1896, opened with His Excellency the Viceroy. Early in 1897 Count Du Chaylard, Consul General for France and Doyen of the Consular Body, Mr. H. B. Bristow, H.B.M.'s Consul, Mr. Edmund Cousins, chairman of the Tientsin General Chamber of Commerce, and Mr. A. de Linde, as adviser, agreed with His Excellency Wang Wen Shao in reference to the undertaking of the first part of the conservancy work, at a cost of Tls. 250,000, and to the appointment of a mixed Commission to prosecute and continue it. This, the first Hai-Ho Commission, was constituted as follows:—

The Tientsin Customs Taotai.

The Chinese officials nominated by the Viceroy as the representatives of the two principal Chinese companies—China Merchants Steam Navigation Company and Chinese Engineering and Mining Company.

The Commissioner at Tientsin of the Chinese Imperial Maritime Customs.

Representatives of the different shipping and lighter Cos.

" " Foreign Concessions (in existence at that time).

" " General Chamber of Commerce.

Although this Commission, as such, never met, the business was conducted by meetings of the Customs Taotai, the Senior Consul, and the Commissioner of Customs. The necessary funds for the Commission's operations were provided by a contribution of Tls. 100,000 by the Viceroy, and from the proceeds of a loan of Tls. 150,000 authorised by the landrenters at their meeting of the 25th June, 1898, and consequently guaranteed by the Municipality of the British Concession. To meet the interest on this loan and to provide for its amortisation, it was agreed, with the approbation of the Chinese authorities and the Foreign Ministers at Peking, to levy an extra duty of $\frac{1}{2}$ per mille ad valorem on all merchandise, which duty was to be collected by the Imperial Maritime Customs. The loan, at 6 per cent. was financed by the Hongkong and Shanghai Bank, the money turned over to the Commission on the 2nd August, 1898, and, with the contribution transmitted by the Viceroy the previous month, furnished the necessary working capital. This work consisted chiefly in the construction of three locks—one in the Lutai (蘆臺) Canal at Chen Chia Kou (陳家溝), one at Chun Liang Cheng (軍糧城), and a third at Taku (沽大)—besides the rounding off of several bends and the training, by means of piles and lateral groins, of some of the most shallow reaches. With these improvements completed in June, 1900, the task of the Commission in the preliminary work contemplated was changed to one of maintenance only, until further operating funds could be procured. Just then, however, the Boxer disturbances, with their concomitant evils, wrought serious damage to the works erected, and marked, as it were, the end of the effectual work of the old Commission.

RESULTS OF PRELIMINARY MEASURES

But before passing on to the next phase of the question, it may be well to record the opinions of observers of the perceptible results obtained by these preliminary measures. One observer writes:—"Has the river improvement scheme of Mr. de Linde achieved its object of enabling steamers to get up to the Bund at Tientsin? As a matter of fact, steamers did not and probably could not have come up to the Bund. On the other hand, the closing of the lock at Chen Chia Kou produced at once an increase of 15 to 18 inches in the depth of the Hai-Ho. The training works in certain parts of the river, from which Mr. de Linde expected much, were interfered with so constantly by villagers—and, perhaps, soldiers—that they did not have a fair trial. In short, the scheme as a whole did not get a fair trial in the summer of 1900." Another says:—"During

January, 1900, the beneficial effects of closing the lock in the Lutai Canal became apparent, inasmuch as the depth of the water increased perceptibly and the amount of silt deposited during the month was considerably less than in January of the preceding year." Then, again, when the mud dam at the mouth of the canal gave way—or was destroyed—in April, 1900, its restoration in May was marked by an immediate rise of 2 feet 3 inches in the river. Whatever the then opinion may have been, the subsequent prosecution of the whole scheme of which these works formed the initial step has fully justified the claims of its sponsors.

For the damage wrought during the summer of 1900 a claim was made upon the Chinese Government, through the Consular Body, for Tls. 126,000; and the sum finally allowed, Tls 80,158, provided an available security for a fund for the rehabilitation of the injured works.

The few remaining steps taken to conserve the river before the present Board was organised and began operations were those of the British Military authorities, who during the summer and autumn of 1900 availed themselves of Mr. de Linde's services to maintain the river at as high a point of navigability as possible—this in order that communication between Tientsin (and hence Peking) and the sea might be unimpeded for the movement of troops and supplies.

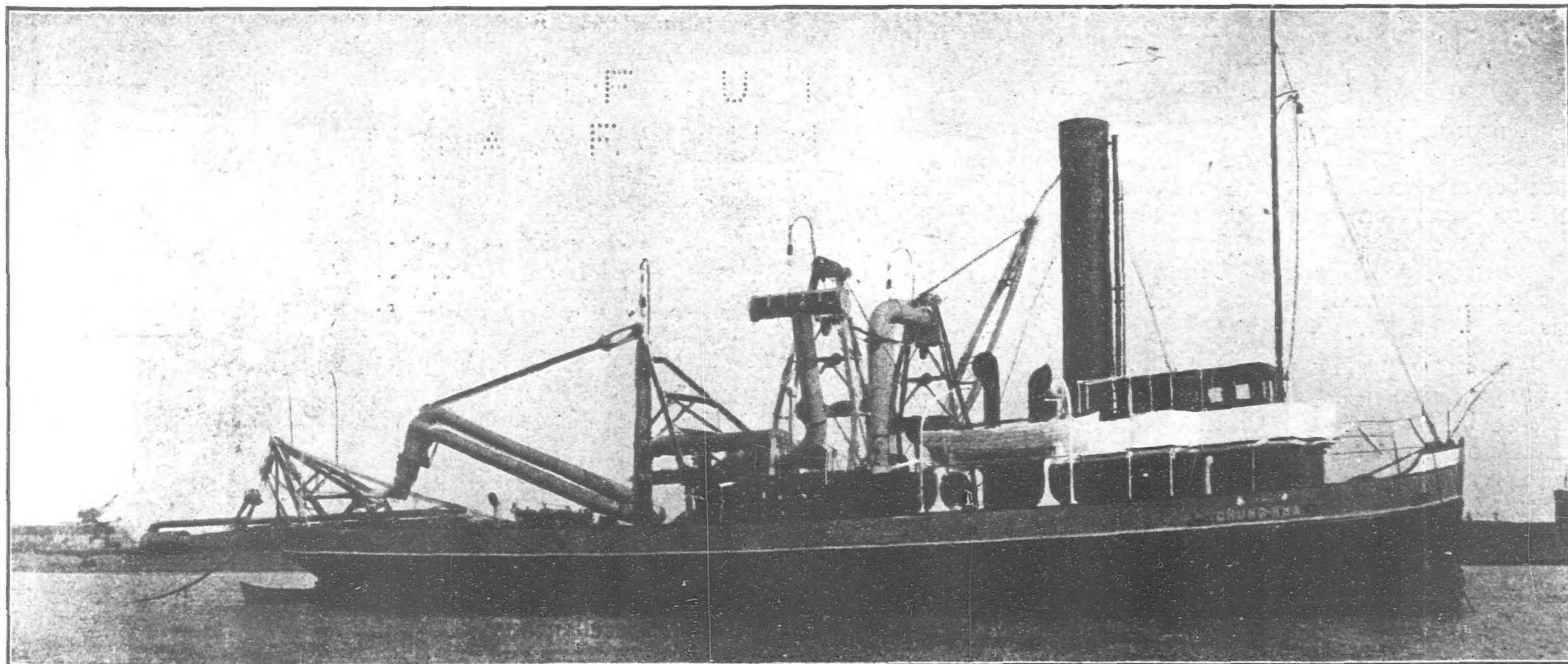
SECOND PHASE OF THE WORK

The second phase of this conservancy work may well be said to have been initiated in the winter and spring of 1901. At first, during the disorganised conditions of trade and administration, it seemed doubtful in just whose hands resided the power and means to carry on the work of the 1898 Commission. Owing to the inability of the Tientsin Provisional Government—under the "General Regulations for the Administration of the Chinese City" from which the Government derived its authority—to extend its jurisdiction over river matters, Field-Marshal Count von Waldersee issued, with the approval of the Commanders-in-Chief of the contingents of the Allied Powers, the new "General Regulations for the Provisional Government of the District of Tientsin" which extended the jurisdiction of the Council to the sea, and which contained the clause reading, "Within the district so entrusted to it the Council must, with its own administration, . . . complete the public works begun and undertake those which may seem necessary—maintain and improve the communications by rivers and canals." This cleared the way for the Council of the Tientsin Provisional Government to take action which it did by electing three of its member—Major-General de Wogack, Lieutenant-Colonel Arlabosse, and Lieutenant-Colonel Bower—to constitute a Commission to prosecute and supervise the conservancy

work. Unfortunately, owing to some misunderstandings which seemed to float away under the mellowing influence of time, the newly-constituted Board did not feel free to go ahead until a feeling of greater unanimity between the various local interests and bodies assured its more general support. The question of the Board's constitution and the methods to be employed in providing the needed moneys were the subjects of some little negotiation between the Consular Body, the General Chamber of Commerce, the Diplomatic Body in Peking, and Count von Waldersee, until, after many proposals and counter-proposals, it was agreed between the Doyen of the Corps Diplomatique and Count von Waldersee, acting for the Commanders-in-Chief, that the members of the Board should be reduced to the three following: a member of the Provisional Government, a member of the Consular Body, and the Commissioner at Tientsin of the Chinese Imperial Customs; to whom were added, with consultative voice only, representatives of Commerce, shipping, and the Foreign Concessions. The Commission was "to examine the question of improving the navigability of the Hai-Ho, technically and financially, and to take, in an independent way, such steps as would satisfy all parties interested in the matter." Not an easy task was thus set for them.

THE CONSERVANCY BOARD

As reconstructed, the Board consisted of Major-General de Wogack, a member of the Council of the Tientsin Provisional Government; Mr. L. C. Hopkins, H. B. M.'s Consul; and Mr. Detring, Commissioner of Customs. The only change that has subsequently taken place in the constitution of the Board was the withdrawal, on the 15th August, 1902, of the representative of the Tientsin Provisional Government, which on that date passed into history, and the assumption of his powers by the Customs Taotai, appointed in accordance with the terms of the Peace Protocol. Naturally there have come, from time to time, many changes in the personnel of the Board and of the general Commission—the consulting members,—owing to changes in the offices holding the right of representation. As it was stipulated at the outset that the Board, in order to give more direct control to the commercial and shipping interests over the funds expended (which were to be largely derived from these interests,) should appoint for its honorary treasurer a man prominent in the commercial life of the port, this important post has been filled consecutively by Mr. W. W. Dickinson, chairman of the Chamber of Commerce, and a member of the general Commission; by Mr. W. Fisher, chairman of the British Municipal Council and also a member of the general Commission; by Mr. J. M. Dickinson, chairman of the British Municipal Council and of the Chamber of Commerce, and by Mr. W. E. Southcott, Chairman of the Chamber of Commerce.



HAI-HO CONSERVANCY.—Suction Dredger for deepening Taku Bar Channel built by Werf Gusto, Firma A. F. Smulders, Schiedam, Holland

What this Hai-Ho Conservancy Board, upheld by the all-important action of the land-renters, has actually accomplished may be best approached by an examination of the means used to finance the Board's schemes; then a statement of the work done and of that in contemplation will be added.

PROVIDING THE FUNDS

The initial difficulty in securing funds for the 1898 Commission was overcome, as stated above, by the contribution of Tls. 100,000 by the Viceroy, and the issuing of the British Municipal loan, for Tls. 150,000, known as the British Municipal Loan E, 1898. This bore interest at 6 per cent.; repayment was to commence at the expiration of one year from the date of issue; the whole amount was to be redeemed within 12 years; and the payment of interest and principal was secured by a levy of River Dues of $\frac{1}{2}$ per mille ad valorem on all imports, re-imports, and exports—being 1 per cent. of the regular Customs full duties—for the period of 12 years, as well as by the property and assets of the British Municipality. This loan ran from the 1st August 1898 and amortisation was completed on the 31st July, 1906.

For the first formidable task of the Board—the excavation of the two upper Cuttings—the second credit, Hai-Ho Conservancy Loan A 1902, for Tls. 250,000, bearing interest at 7 per cent. and fully redeemable in 22 years, was issued by the Board itself.

This supplemented the grant of Tls. 250,000 by the Tientsin Provisional Government. The loan had for its security an additional 1 per cent. of Customs Duties, and was guaranteed in principle on a pro rata basis by the various Foreign Municipalities. This loan was extinguished on the 1st October, 1910.

The next loan, Hai-Ho Conservancy Loan B, 1903-4—the proceeds of which were to furnish funds to make the third cutting—amounted to Tls. 300,000. It carried practically the same conditions as the second loan, in that it was to yield 7 per cent. to the investors, to be redeemed in full in 25 years, and had the same securities in an additional 1 per cent. of Duties as added River Dues. This loan was finally redeemed on the 15th September, 1911.

After protracted negotiations the assent of all the interested parties was secured in November 1908 to a further loan of Tls. 870,000.

This loan was to cover the following programme:—

1. Purchase of 4 light-draught Tugs for Raking.
2. " " sea-going Bucket dredger.
3. " " 6 mud barges.
4. " " 1 Tug boat.
5. " " Floating pumping station.
6. " " Pipe line for discharge ashore.
7. " " Floating discharge pipe and the making of the fourth cutting, including purchase of a bucket dredger.

This loan, bearing interest at 6%, was financed by a levy of River Dues of 4% of Customs Duties and a Shipping Tax of one mace per registered ton on vessels that cross the bar and of five candareens per ton on vessels that remain outside the bar, the latter to have the option of paying one mace per ton on all inward and outward cargo carried. Amortisation is to commence five years from date of issue and to be completed in twenty-three years.

The first imposition of River Dues ($\frac{1}{2}$ per mille ad valorem on all merchandise—that is, 1 per cent. of Customs Duties) was made on the 1st August, 1898; the second (2 per cent. of Customs Duties) on the 15th October, 1901; the third (3 per cent. of Customs Duties) on the 1st September, 1903; the fourth ($3\frac{1}{2}$ per cent. of Customs Duties) on the 1st June, 1908 and the 5th (4% of Customs Duties) on the 1st January, 1909.

The amounts yielded by the River Dues are as follows:

1898	August to September (1 per cent. of Customs Duties)	Taels.
		10,275
1899	(1 per cent. of Customs Duties)	22,302
1900	" " "	8,608

1901	(1% of Customs Duties; 2% from 15th October)	14,528
1902	(2% of Customs Duties)	63,691
1903	(2% of Customs Duties; 3% from 1st September)	53,119
1904	(3% of Customs Duties)	70,720
1905	(3% of Customs Duties)	111,439
1906	" " "	117,327
1907	" " "	101,318
1908	(3% of Customs Duties $3\frac{1}{2}$ from 1st June)	85,574
1909	(4% of Customs Duties)	123,005
1910	" " "	127,419
1911	" " "	122,985
1912	" " "	128,206
1913	" " " to 31st October	117,310

Total Tls. . . 1,277,826

The Shipping Tax collection has been as follows: Tls.

1908	26,327
1909	95,336
1910	93,407
1911	107,001
1912	91,648
1913	82,409

Total Tls. . . 496,128

A monthly grant of Tls. 5,000 was made by the Tientsin Provincial Government from 1st June 1901 to the 15th August 1902, which has since been continued by the Chinese Government in accordance with the Peace Protocol as a monthly grant of HK: Tls. 5,000

Making a total to date of Hong Ping Tls. 778,625.

The following is a summary of loans, etc.,	Tls.
Viceroy's contribution of 1898	100,000
British Municipal Loan E. of 1898	150,000
Tientsin Provisional Government grants during	
1901	250,000
Hai-Ho Conservancy Loan A. 1902	250,000
" " " B. 1903-4	300,000
" " " C. 1909-10	870,000
" " " D. (1st issue) 1912	175,000

Total Tls. . . 2,095,000

Of these loans C. and D. are still outstanding.
Miscellaneous receipts have been: Taels.

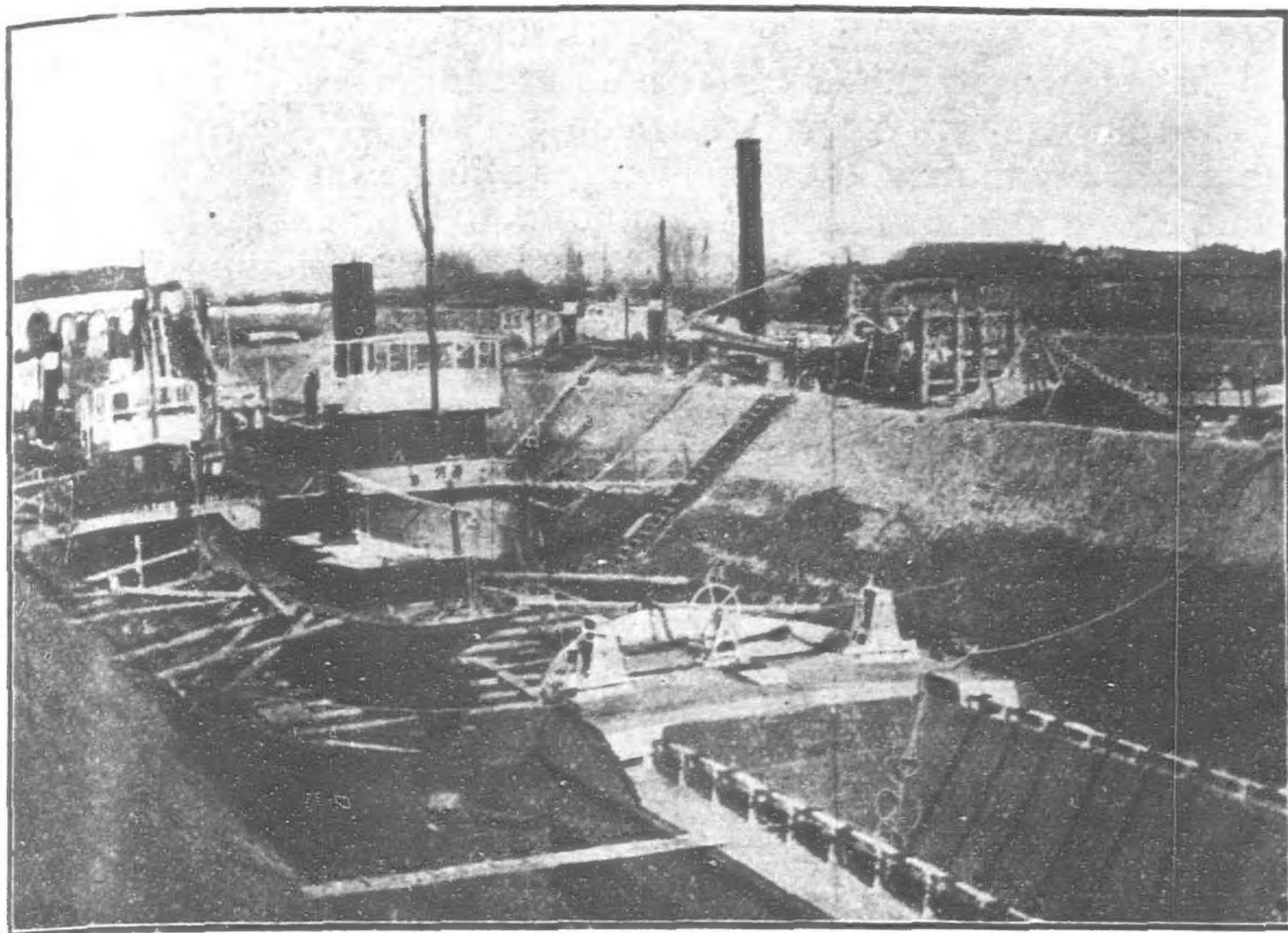
Interest	40,719
Rent of land	2,606
For filling supplied	92,000

Total Tls. . . 135,325

The total of monies received by the Commission since its inception has therefore been, Taels.

River Dues collection	1,277,826
Shipping Tax collection	496,128
Loans, etc.	2,095,000
Government grant	778,625
Miscellaneous	135,325

Total Tls. . . 4,782,904



HAI-HO CONSERVANCY.—Commission's Dock

The assets of the Commission to-day are :

Dredging, etc., plant :	Tls.	
500 C. M. Dredger "Hsin-Ho" ..	210,000	
" " "Chung-Hua" ..	130,000	
125 " "Pei-Ho" ..	20,000	
Grab-dredger	8,000	
Pipe Lines	30,000	
Tug "Hun-Ho"	31,000	
Ice-Breaker "Tung-ling"	98,000	
" " "Kai-ling"	50,000	
Four raking Tugs	65,000	
Launches	5,000	
7 Steel barges	66,000	713,000
Workshop, lands, buildings, etc.,	120,000	
Stores and spare parts	15,000	
Bank Balances	160,000	
	Tls.	1,008,000

Deducting this sum from the total receipts the balance Tls. 3,774,904 represents the cost to Tientsin of improving and maintaining its waterway from 1898 to the present day.

To arrive at the amount actually expended on river works we must deduct the cost of Taku Bar work Tls. 246,000, which will be dealt with separately, and the monies devoted to payment of interest and amortisation of loans which come to Tls. 1,536,644.

We have thus approximately two million Taels as the sum which has been expended by the Commission on river conservancy. When the Hai-Ho Conservancy Board began operation in the fall of 1901, its plans called for the cutting out of many of the bends between Tientsin and Taku, the training of more of the reaches, and the continuation of the old policy to keep as much water in the Hai-Ho as possible by means of a system of locks on the distributary canals. Five cuttings were in contemplation.

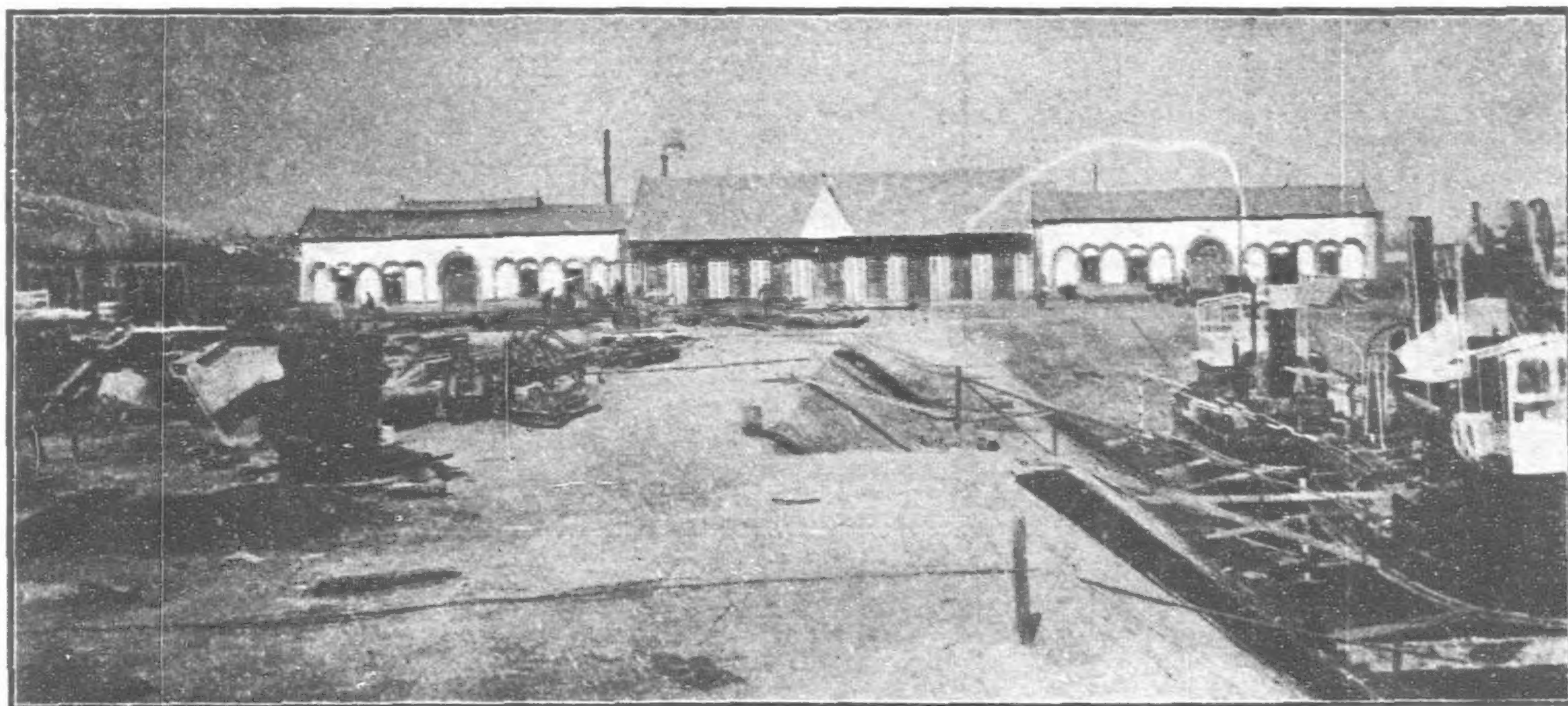
WORK IN EARLY DAYS

Early in October 1901 the Board contracted for the excavation of the first two of these, to a depth of 23 feet, for Tls. 270,000, and work was begun on the 21st October of that year. As shown on the map, the first cutting, 0.75 mile long, extends from Kua-Chia-Ssu (掛甲寺) to Yang-chuang and has eliminated the Tientsin Bend and Match Factory Bend and the

so-called East Reach, of which the two former were difficult of navigation owing to the small radius, while the latter was a very shallow place because of the great width of the river. As the length of the old river eliminated was 2.1 miles, this cut effected a saving of 1.35 miles. The second cutting, extending from Hsia-Chuan (下圈) to Ho Chia Chuang (何家莊), is 1.1 miles long, and has done away with the Double Bend and the Vegetable Bend, besides two other sharp curves between the Arsenal and the Vegetable Bends. Here, again, 42 miles of winding river were reduced by 3.1 miles; thus making the total reduction in distance effected by these two cuttings about 4.4 miles. Their excavation to a depth of 23 feet below the surface of the soil, and to widths varying from 325 to 360 feet, necessitated the removal of nearly 550,000 fang, or, approximately, 2,200,000 cubic yards of earth—an amount which no layman can well appreciate until he climbs one of the mounds on the bank of the cutting and looks along the small mountain of earth that has been thrown up there. The first cutting was opened to shipping late in July 1902, and the second early in September of that year. Their successful completion, and the great economy effected by them, confirmed all in their belief in the Board's general scheme and stimulated the action which led to the prosecution of the plans for the third cutting. Work upon this, was commenced in September, 1903, and continued, after the cold weather ceased, until the end of June, 1904. This new highway runs between the village of Yang-Chia-Ch'ang (楊家場), at the Lower Tombs Bend, and Hsin-chuang (辛莊), above Ni-wo. In just a little over 2 miles it has shortened the river's course by over 4½ miles, thus effecting, with the two upper cuttings, a saving of nearly 9 miles in the run between Tientsin and Ni-wo; moreover, it eliminated the three worst bends then left in the river—the Low Tombs Bend, the bend at Handsome Point, and Pai-T'ang-K (白塘口) Bend—together with some other bad places. An appropriate ceremony was observed in the opening of this cutting by a representative of the Native authorities of the province; Admiral Yeh represented His Excellency Viceroy Yuan Shih K'ai, and, through him, the great numbers of people in this region who derive the inevitable benefits of every enhancement of the port's trade. In the Autumn of 1908, as stated above, the sanction of all the interested parties was obtained to the next and greatest scheme which involved the making of the Fourth Cutting and the purchase of dredging and pumping plant and of four Tugs for work on the Taku Bar.

As originally contemplated the Fourth Cutting was intended to cut off two bends comprising four reaches, viz: The East Reach, the Hsien Sui Ku reach in the first or upper bend and the Hupeh Reach and Stone Reach in the lower bend. The prices asked for the land proved, however, so exorbitant that it was only found practicable to proceed with the upper and more important section of the cutting. The length of this cut is 2.36 miles and it has shortened the river by 5.6 miles. The total mileage cut off by the four cuttings is 14.7.

This cutting was made by dredger instead of manual labour. The dredger employed was a 500 C.M. bucket dredger with pumping installation.



HAI-HO CONSERVANCY.—The Workshops

Three cuts were made: the first 189 feet wide and 12 feet deep on the South side, the second of similar dimensions on the North side and the third a channel 200 feet wide and 7 feet deep at the upper end and gradually increasing to 220 feet wide and 9 feet deep at the lower end.

The first two cuts were made by dumping the soil directly into the suction well of the sand pump and the mixing has been produced by delivering the water jet, raised by the centrifugal pump, over the knife grill. This method was necessitated by the hardness of the soil and by the quantity of stiff roots encountered.

The third cut was made by dumping the soil over a grill of knives, where, in addition to the water jet, the revolving cutter assisted the mixing.

The total excavation was 3,200,000 cubic yards or 865,000 fang and the time occupied was 7,500 working hours. The dredger commenced work in June 1911 and the cutting was opened to traffic in July, 1913.

The cost of excavating the cutting (excluding purchase of land, houses and graves, but including Tls. 74,000 for depreciation of plant) was Tls. 236,200 or 27.3 candareens per fang.

The contract for digging the third cutting by hand was at the rate of Tls. 0.43 per fang.

It may be here stated that the making of further cuttings between Tientsin and Taku is not deemed advisable for the reason that the increased scour would be more than the river banks could withstand and would entail very heavy expenditure on bank protection.

Many other minor works have been carried through by the Board, as integral parts of the whole plan—such as the training of many of the reaches, narrowing the river where too great width has militated against its depth, and the care of the canal connexions,—of which space will not permit a description in detail; yet of these lesser achievements it seems worth while adverting to some that stand out above the others. Mr. de Linde, as his first serious attempt, in 1898, to confine more water to the river's bed erected a weir and lock on the Lutai Canal at Chen Chia Kou; this was badly damaged during the Boxer troubles. The Board repaired the damage in 1902, and erected a new lock beside the old one, which can accommodate 30 or 40 boats at one time, instead of the single one to which the capacity of the old lock was limited. His Excellency the Viceroy was present at the opening of the new lock on the 24th September, 1902.

Another piece of work deserving special mention has been the widening of the river at the Concessions. In earlier years the steamers that came up to the Bund were compelled to drop down stream stern first over a mile before they could find water enough to turn; then in July 1903 the removal of the German military bridge rendered possible the making of a swinging-place just off the upper end of the German Concession; and at present the widening opposite the Bund has proceeded so far that a large proportion of steamers swing right abreast of their wharves.

The erosion of the concave at the lower end of the First Cutting has been arrested by protection work of Zinkstuck, which were here used for the first time on the Hai-Ho. A length of about 1,400 feet was protected at a cost of Tls. 4.00 per foot. The protection has stood well and has effected a great improvement in that it has diverted the channel towards the middle of the river.

DISPOSAL OF MUD

With the aid of the pumping station provided for under Loan C. of 1909-10 the question of the disposal of dredged spoil has been solved to the mutual satisfaction of Concessions and Commission. The silt annually dredged from the harbour to provide sufficient width at the wharves is now pumped into the lowlying land and ponds in the Concessions in the development of which it is of material assistance as the cost is considerably lower than that for filling from other sources.

The quantity of mud pumped into the French and German Concessions since the pump became available is

1910.	38,586	fang
1911.	60,970	"
1912.	53,885	"
1913.	99,000	"

The dredging done in the Harbour for the past three years is in excess of the actual requirements of shipping but the receipts for filling more than cover the cost of such dredging as is done only to meet the demands for filling from the Concessions. The advantages of raising low land in this manner are obvious: firstly it is cheaper and secondly not only is it unnecessary to take earth from other places to raise properties on which it is desired to build and thereby create noxious ponds near dwelling houses; but the ponds already in existence, which are a menace to the health of the community can also be filled up. It would hardly be an exaggeration to say that this method of filling has revolutionised the prospects of some areas in the Concessions.

BENEFIT TO SHIPPING

The manner in which shipping has benefited from the improvement of the Hai-Ho is shewn in the following *resume*: During 1902 the river was freely navigated up to the Bund, by sea going steamers, in seven to eight hours. On the 21st August of that year the S.S. "Lienshing" arrived in the harbour as the largest vessel that had reached the Bund since the 12th April, 1899. During November 1902 the steamers "Taishun" and "Anping" of the China Merchants Company, came up with a length of 270 feet between perpendiculars—or some 10 feet more than the "Lienshing." In the three Autumn months 77 sea going steamers came up on draughts of from 9 feet 6 inches to 10 feet 6 inches. During 1903 there were 333 sea going merchant vessels that navigated the river to the Bund, one of which came up on a draught of 11 feet 8 inches. 374 vessels came to the bund in 1904 and on the 18th October the S.S. "Anping" came up on a draft of 11 feet 9 inches. Two days after the opening of the 3rd cutting the S.S. "Kwangchi" made the journey from Tongku to Tientsin in 4 hours, 10 minutes which was exactly one hour less than the record existing previous to the opening of the cutting. On the 14th August, however, the S.S. "Anping," with wind and tide greatly in her favour, made the passage down from the swinging place at Tientsin to Tangku in 3¼ hours. During 1905 vessels to the number of 395 came up to the bund. Early in that year the Harbour Master (Mr Susemihl) placed on official record that he doubted if for as long as foreign vessels had navigated the river it had ever been better—soundings on the 31st March showing, at high water, nothing less than 13½ feet in the fairway the whole length of the river between Tangku and Tientsin, the tide on the Bar being 9½ ft. The deepest draught vessel that actually came up the river was the "Admiral v. Tirpity," drawing 11'7". The feature of the year was that, owing to the widening of the river at the Concessions, a large proportion were enabled to swing at their berths. On the 21st July the longest steamer that had probably ever visited Tientsin, the S.S. "I-chang" (275 feet between perpendiculars) swung abreast of the Harbour Master's office with some 20 feet to spare, drawing 9'6" aft and 6'6" forward.

In 1906 the river was navigated to the bund by 444 steamers and of these 150 swung at their berths. Save on a few exceptional days a steamer could, at high water, have come up to the bund at any time during the year on a 12 feet draught. During 1907 out of 856 vessels which visited the port 513 came up to the bund of which 267 swung at their berths.

The river was in better condition than ever, the S.S. "Lienshing" came up drawing 12'11" forward and 13'6" aft and the average draft was considerably deeper than in former years.

In 1908 the total number of entries was 788 and of these 511 came up to the bund and 323 swung at their berths.

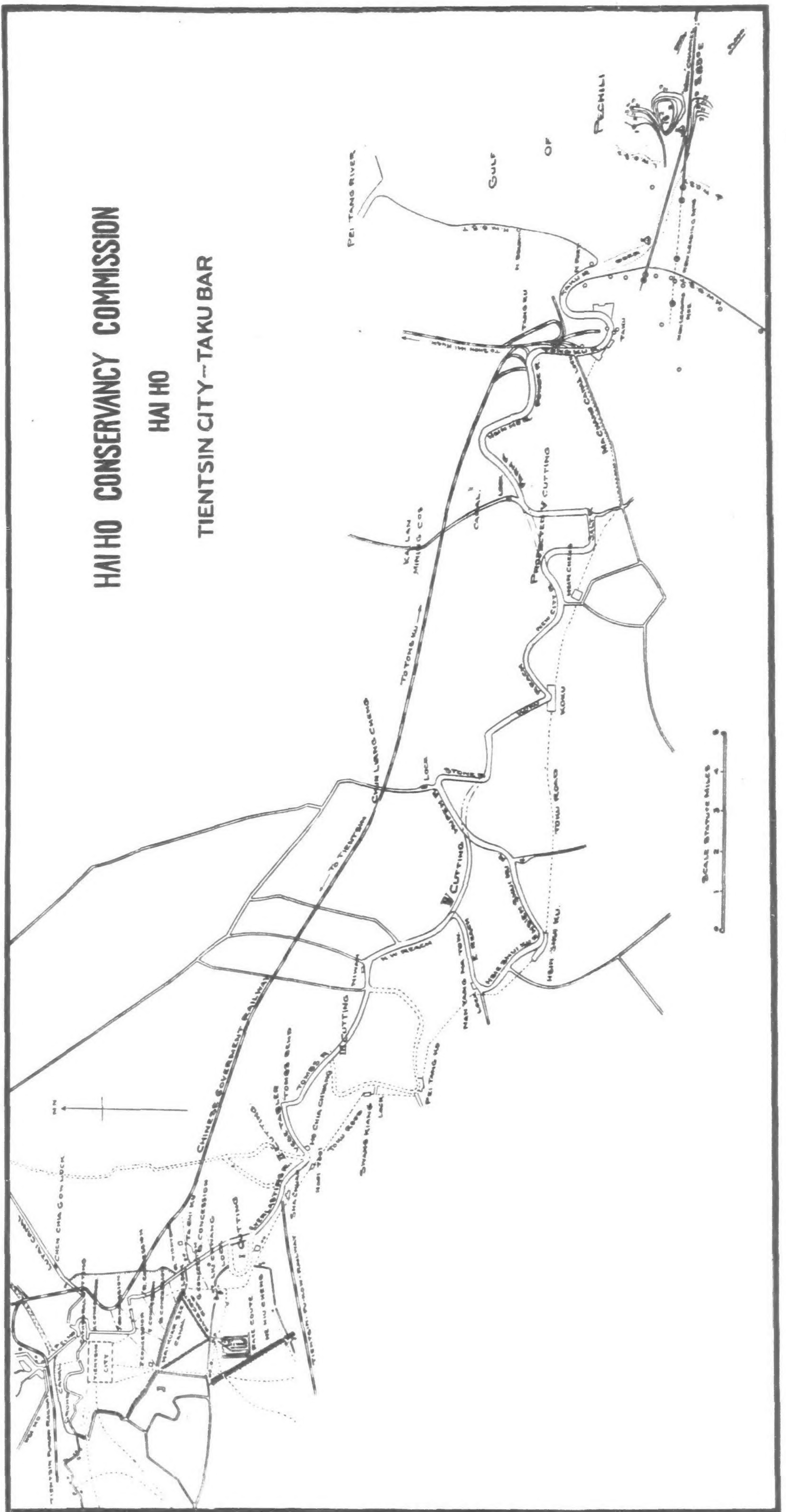
The deepest draft vessel to come up the river was the S.S. "Tingsang" drawing 13 feet on even keel.

During 1909 there arrived at the bund 623 steamers out of a total of 1,006 entries of which 54 had a draught exceeding 12 feet.

In 1910 of 992 entries 617 came to the bund of which 130 had a draught exceeding 12 feet.

The total entries in 1911 increased to 1,198 and of these 698 came to the bund. The draught of 137 vessels exceeded 12 feet and 20 of this number were drawing more than 13 feet. A

It is believed that the Admiral's resignation will lead to a change in the Board of Directors.
—*Japan Daily Mail*.



NEW RAILWAY THROUGH HUNAN AND KWEICHOW PROVINCES

INTRODUCTION OF THE PERCENTAGE CONTRACT CONSTRUCTION SYSTEM IN CHINA

On December 18th, the Minister of Communications, H.E. Chow Tsz-chi, on behalf of the Chinese Government, entered into an agreement with Lord French, representing Pauling and Company, Limited, of London, for the financing and construction of a railway from Shasi on the Yangtze to Shingyi in South Eastern Kweichow.

This contract is a modification of the one signed by Dr. Sun Yat-sen and Lord French on July 4th ulto. providing for a railway between Canton and Chungking. The Canton-Chungking line had been designed as the shortest route from the rich and populous province of Szechuan to deep water at Canton. With the great development of trade and commerce incidental to the opening of Szechuan to rail transportation, the shortest route to the sea was imperative to the future prosperity of the province, and as Canton was 250 miles nearer than Shanghai, this route was naturally selected. The only difficult section of the proposed line was the 160 miles between Fuchow on the Yangtze up the Wukiang valley to Szenanfu. This section also passed through a sparsely settled country, but once the through line was completed, and the trade of Szechuan could find its outlet to Canton, it was hoped that the line would become one of the most profitable in China. The crowded population of Szechuan would have found opportunities for colonizing the valleys of Kweichow and thus aided in building up the prosperity of the proposed line.

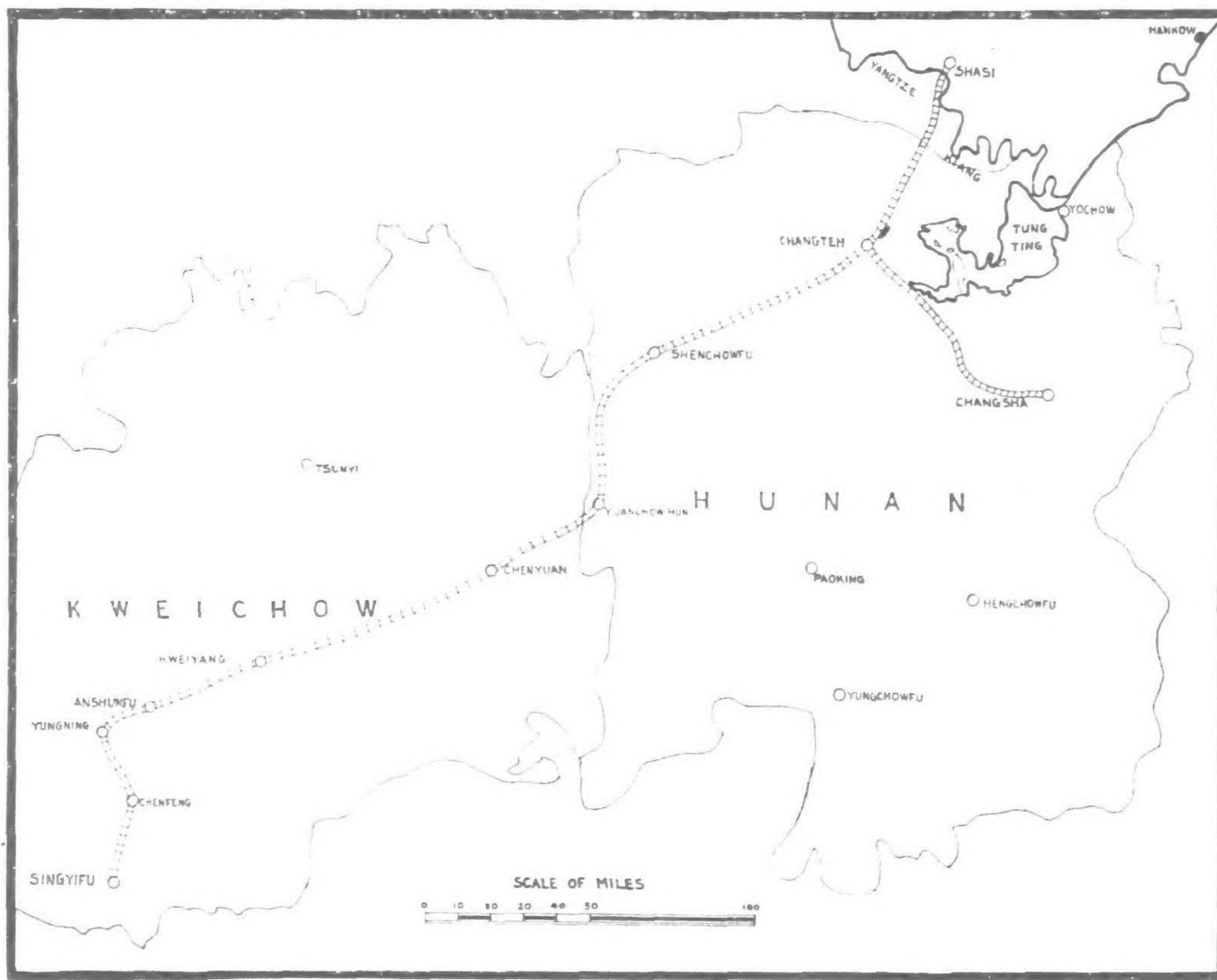
The railway as projected followed the existing route of the Yueh Han Railway to Samshui, and from that point would have passed through Shiuhing and Takhing to Wuchow, thence up the Kwei River Valley through Pinglo to Kweilin, and from there over the Nanling mountains to Yuanchow. From Yuanchow the route was through Tungyenfu to Szenanfu, and thence down the valley or gorge of the Wuking to Fuchow on the Yangtze, where it would connect with the rails of the Szechuan Railway to Chungking and Chengtu.

The contract with Messrs. Pauling and Company had been initiated in London in April last by Dr. Sun Yat-sen's representative and provided for the construction of the line under contract in which the contractor's profit was a fixed percentage over and above the actual cost of construction and equipment.

The usual recognized and legitimate basis of profit on large construction contracts of this nature is fixed at ten per cent. The American Government allowed fifteen and a half per cent. over the actual cost of the Philippine Railways as the contractor's and financier's profits. The British Government is paying ten per cent. profit to the contractors on the largest harbour

works construction in Great Britain, and the Indian Government is also allowing ten per cent. profit on engineering and construction work. Messrs. Pauling and Company, for reasons purely applicable to China, were prepared to undertake the contract at a lower percentage than the usual practice and custom, largely to convince the Chinese of the advisability of having their railways constructed under a different system than the departmental one. Owing to the fact that all foreign financed railways in China have hitherto been constructed under loan agreements providing for engineers nominated by the Banks, the experienced contractors who have constructed thousands of miles of lines in other countries, were debarred from participating in the development of Chinese railways. These reputable

contracting firms with years of experience behind them and an effective organization to operate with, could naturally construct railways more economically, efficiently and expeditiously than any one engineer nominated by the Banks, who had to create an organization before he could proceed with the work. The railways constructed under the departmental system, have in some instances been subjected to much criticism as to the costs of construction, but owing to the peculiar political situation surrounding the financing of Chinese railways, the Chinese Government has not been at liberty to modify the usual departmental loan terms.



Rough Sketch of the Shasi-Shingyi Railway

In the past various contracting firms have offered to construct and equip railways in China on the same specifications of the best built and equipped loan built line at a price which on analysis proved that the actual cost would be from one-third to one-half the cost of those built under loan agreement terms. But as the European governments steadily preserved the monopoly in favor of the more expensive commercial methods, the experienced contractors were never permitted to enter the field.

The firm of Pauling & Company, Limited of London, enjoy the peculiar distinction of being the most experienced and capable railway builders in the world. They specialize in railway work alone, and maintain a splendid organization for the prosecution of their contracts. This firm has constructed over 2,500 miles of lines for the Rhodesian Government alone, and are permitted carte blanche in the carrying out of construction operations.

Messrs. Pauling & Company had endeavored for several years to gain a foothold in China, but the peculiar influences binding the British Government and the British Official Group, effectively closed the door to their entrance in the field as contractors.

It was because China's interests demanded some modification of the departmental and commercial system of constructing her

future railways, and because the period of concessions had come to an end that the negotiations were opened by Dr. Sun Yat-sen's representative with Messrs. Pauling & Co., which led to the Canton-Chungking railway agreement. That agreement was, however, nullified by the cancellation of Dr. Sun's powers as head of the Chinese National Railway Corporation by the President on July 18th, and the Government refused to recognize the validity of any agreement entered into by Dr. Sun. Becoming convinced, however, of the soundness of the principle of railway construction on a percentage basis underlying the Canton-Chungking Railway contract, President Yuan decided to have it initiated in China, and the Minister of Communications negotiated another agreement for the above-mentioned route from Shasi to Shingyi.

Although the Canton-Chungking line was recognized as an essential trunk railway for the future development of the Republic, it was considered that it was not immediately necessary, and that the country's political needs demanded that the distant provinces should be linked with Hankow as soon as possible.

It was therefore decided to leave the Canton-Chungking proposal out of consideration and to adopt a line linking Hankow with the province of Kweichow and Yunnan. The terminus of the line was located at a point opposite Shasi on the Yangtze, to be connected direct with Hankow by the German section of the Hukuang Railway, or by a separate line. From Shasi the new railway will strike southwards through Lichow to the treaty port of Changtehfu. From there a branch line will communicate with the Provincial capital and treaty port of Changsha and connect with the Canton-Hankow Railway.

From Chengtehfu the main line will proceed along the fertile and rich valley of the Yuan River, through Shenchowfu to Yuanchowfu, thence through Szechow, Chenyuan and Pingyueh to Kweiyangfu, the Provincial capital of Kweichow Province. From there it will proceed to Anshunfu and Yungning and thence south to Shingyi, the terminus. At this point it will connect with a railway to be constructed from Yunnanfu through Shingyi and thence south to Peseting, on the West River, and to Nanning.

SOUTH MANCHURIA RAILWAY.

ESTIMATES FOR NEXT YEAR.

According to the *Manchuria Daily News* the South Manchuria Railway estimates for the coming year amount to Y.11,170,000. The items are said to be as follows:—

	Yen.
Railway { Main and Branch Lines.	2,620,000
Railway { Mukden-Antung Line	600,000
Shipping	25,000
Electricity	167,000
Gas	156,000
Harbour	2,160,000
Mining	3,320,000
Hotels	160,000
Land	1,743,000
Sundries	225,000

(1) RAILWAY. 11,170,000

Main Line.—Earthwork Cutting for the site of the new railway station, Dairen, cutting, grading, construction of culverts, retaining walls and drains at places between Dairen and Changchun.

Bridging: Construction flood-opening on the Hun; the extension and reconstruction of other bridges.

Rail-laying: Relaying of rails in the compounds of the station at Dairen, Tashihchiao, Changchun, etc.; improvement of the sub-grade installing of tie-plates.

Stations: Construction of engine sheds, Dairen, and the auxiliary buildings; construction of warehouses at Mukden; installation of turntables at Dairen, Tashihchiao, and Changchun; construction of subterranean passageway in the railway station compound at Changchun; coaling equipments at Dairen and Tashihchiao; water-feeding arrangements at several places, etc.

Signalling: Installation of an interlocking of signals and switches; replacing of the telephone system with a more up-to-date installation.

Mukden-Antung Line.

Levelling and alterations in railway station compound at Penchihu; filling work at various places; constructions of sidings at Antung Station; replacing of the telephone service as on the Main Line.

Rolling Stock.

Construction of five locomotives, fifteen passenger cars, and 170 goods cars for the Main Line and the conversion and alterations of both passenger and goods cars; construction of a locomotive, four passenger cars, and 38 goods cars for the Mukden-Antung Line.

(2) SHIPPING.

Construction of a dredger and two hopper barges for use in connection with the Dairen Harbour Works; a coaling boat for Dairen Wharf and a steam launch for Yingkou Branch of the railway Wharf Office.

The approximate mileage of the new line is as follows:—

Shasi To Lichow	50 miles
Lichow to Changtehfu	40 ..
Changtehfu to Shenchowfu	110 ..
Shenchowfu to Kienchowting	25 ..
Kienchowting to Fenghwangting	20 ..
Fenghwangting to Yuanchow	35 ..
Yuanchow to Hwangchow	30 ..
Hwangchow to Szechow	30 ..
Szechow to Chenyuan	30 ..
Chenyuan to Hwangping	30 ..
Hwangping to Pingyueh	30 ..
Pingyueh to Kweiyang	60 ..
Kweiyang to Anshunfu	60 ..
Anshunfu to Chenning	10 ..
Chenning to Yungning	20 ..
Yungning to Chengfeng	35 ..
Chengfeng to Shingyi	40 ..

Branch	55 Miles
Chantehfu to Yiyang	55 ..
Yiyang to Changsha	50 ..

Total 760 miles

The railway is most important for the political control of the country as well as for the opening of an exceptionally rich and productive region. It follows the old established trade route up the Yuan River valley, which from time immemorial the Chinese have employed to reach Kweichow and Yunnan. The Yuan River is navigable for small boats as far as Chengyuan in Kweichow, and from this point carriers are used exclusively until the Yuannan border is reached, where ox carts take their place. With the completion of the proposed line westwards from Singyifu to Yunnan, the southwest will be brought into direct touch with the rest of the country.

(3) ELECTRICITY.

As the demands for lighting service and motor power at Dairen, Mukden, Changchun, and Antung have risen, the extension of wires, the installation of additional switch-boards and the other accessory equipments are to be undertaken.

(4) GAS.

The existing service at Dairen is to be extended to Shahokou. Provision is to be made to meet the steadily increasing demands in the city of Dairen.

(5) HARBOUR WORKS.

Reclamation of the shorefront of Jijiko (East End): construction of Northwest Breakwater; reconstruction of quay wall; construction of the new third pier; continuation of reclamation work of 25,000 *tsubo* along the shore line of Hama-cho; Dredging work at Antung; bunding work at Yingkou.

(6) WHARVES.

Construction of permanent warehouses on East Quay; grading work in the compounds of the branch offices at Yingkou, Antung, and Shanghai, and reconstruction of roads.

(7) MINING.

In order to make up the shortage of output of coal at Fushun Collieries through the installation of the sand-flushing method at Oyama and Togo Shafts, two new inclines are to be excavated near Oyama Shaft and at Wantawu; Laohutai Pit is to be the next to have a similar installation; installations for the producer-gas plant and the turbo-generator plant installation of mechanical appliances for transportation of coal at the Collieries; completion of the equipments for transportation by electricity.

(8) HOTELS.

Extension of the Yamato Hotel at the railway station at Mukden and the furnishing of the new Yamato Hotel, Dairen.

(9) LAND.

Construction of roads and bridges, waterworks, parks, cemeteries, and crematoriums in the railway Area; levelling work for building lots; construction of new buildings for Central Hospital, Dairen, and extensions of branch hospitals at Yingkou and Antung; construction of the new buildings for the branch hospital at Mukden; additional equipments of branch hospitals at Liaoyang and Kungchuling.

Construction or extension of primary school houses at Haicheng, Mukden, and Lienshankuan, and the Chinese Primary School at Liaoyang.

Continuation of construction of the new premises for the Central Laboratory with its various divisions, and the installation of the machinery, etc.

Installing sundry arrangements at the Industrial Experimental Station at Kungchuling and its branch station at Hsiungyocheng.

Constructions, alteration, and repairs of the Company's Offices and the officials' residences.

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MINING REGULATIONS FOR CHINA

The Minister of Commerce and Industry, Mr. Chang Chien, is at present devoting attention to the framing of regulations which, if adopted, will place the mining industry of China upon a proper basis and permit of development with foreign capital, knowledge, and experience. The so-called new mining regulations which were published some time ago in Peking must not be taken as official. No definite or recently drafted regulations have as yet been adopted by the Government, but those that will become the law of the land will be based on regulations that have been in effect in the past, though the aim of the present Minister is to open the door to foreign capital and assistance. The regulations which were introduced to govern mining before the 29th year of the late Emperor Kwang-hsu limited foreign participation to four-tenths of the capital; those that were put into effect in the first year of Emperor Hsuang-tung permitted foreign investments to the extent of five-tenths, and those framed in the first year of the Republic reduced it again to four-tenths. It is the hope of Mr. Chang Chien to remodel this particular aspect of the regulations so that foreign capital shall have equal opportunities with Chinese, and so that the transference of shares shall be unrestricted.

The four chief points which require remodelling and which will receive attention deal (a) with the ownership of mining property, (b) the extent of mining areas, (c) the tax to the Government, and (d) foreign participation. In the past the owner of surface land had a claim to a substantial share of the profits from mineral development on his property, but that will be amended by the Government claiming ownership, for disposal as it thinks fit, of all minerals beneath the surface, thus depriving the owner of the surface to any claim to the wealth beneath unless he acquires it by virtue of a mining right. Whereas in the past it has been impossible to obtain any more than 960 mow of land for mining purposes it is now proposed to make the limit 10 square li, or ten times as much as formerly, and instead of the Government demanding a specified royalty from the mining company, proprietor, or promoter, as in the past, a tax will be collected upon the output of the mine. To give an impetus to development Mr. Chang Chien proposes, as mentioned above, that foreign capital shall be given greater facilities: that it shall have equal rights with Chinese capital. He expresses the idea (which he hopes to have embodied in law) that foreigners should be entitled to buy whatever shares they may like on the stock exchange, and it is his intention to establish stock exchanges under Government regulations, which will be open to foreigners and which will be the medium whereby foreigners may obtain scrip in mining ventures as and when they please. So far as foreign participation in the management of a mine is concerned Mr. Chang Chien has an open mind. He does not favor any undue or harassing restrictions being placed upon foreigners who subscribe capital, and so far as he is concerned he has no intention of embodying in the regulations any clause that will prevent foreigners taking part in the safeguarding and proper expenditure of their capital. The control of mining properties will be entirely in the hands of those who secure the mining rights. If a mine is to be developed by the Government the control will be in the hands of the Government, but if development is to be done by a Company then the Company will make its own arrangements as to how far those who subscribe the capital will be entitled to a share in the control. With a view to classifying the minerals of China and the areas in which they abound a Mining Bureau will be established, whose business it will be to attend to this work and carry on a continuous policy of development on behalf of the Government. Already the Minister has had a German mining engineer and a number of students to report upon the mineral deposits of Shansi province, and a similar work will be carried out eventually with regard to each province. The results will be compiled for public use, and it will be the aim of the Bureau to assist the investing public properly to develop the rich resources that are now practically untouched.

That Mr. Chang Chien may succeed in introducing a broad minded policy of development will be sincerely wished by all who have in the past suffered from the irksome restrictions of the Government and the opposition of the people. Mining has been

kept in check deliberately despite the fact that through its means the wealth of the nation could easily be multiplied a thousandfold, but since Mr. Chang Chien has demonstrated in his own home districts that he is far-seeing enough to realise the great advantages of modern machinery—for he has established many industries equipped with foreign manufacturing plants—there are grounds for believing that he will use every endeavor to bring to China the best that is available both in the matter of men, money and machinery for the establishment of her most important and most shamefully neglected industry upon a basis commensurate with her financial needs and vastness. It will be deplorable if at this stage of China's history the Cabinet does not see eye to eye with Mr. Chang Chien. They are the officials who are responsible for a final decision making for the adequate opening of industrial avenues to foreign capital, and without foreign capital and brains no proper industrial development can take place. So much depends upon the results of mining that it is impossible for foreigners, who have long learned what the chief source of wealth is, to understand the process of thought of the Chinese when they bar the way to the employment of the capital and energies of men who have the knowledge and experience which will best serve her at this important period of her existence.

CONSERVATION AND IRRIGATION

One of the most hopeful of recent signs was the mandate appointing Mr. Chang Chien head of a National Conservancy Bureau. This body is to control the Hwai River and all conservation and irrigation schemes, except those already provided for by the Whangpoo and Haiho Conservancy Boards. It is understood that Mr. Chang Chien has in view a most comprehensive scheme for the betterment of the condition of the waterways of China, and that work on an extensive scale will be begun directly money becomes available.

While progress in railway construction is of the very first importance to the well being of China, the means of communication provided by her innumerable waterways should be recognised as of great value. For centuries the bulk of the internal trade was floated on the bosom of the waters, natural or designed, and the canal system of China has evoked wonder and praise from the Westerner. But neglect and corruption have largely impaired the value of the waterways. What used to be the besetting sin of China, the diversion of money intended for public purpose to private pockets, has led to the impairment of such magnificent and useful works as the Grand Canal.

The expenditure of great sums on the dredging and other material required and in labour, will be one of the most lucrative investments China will ever have made. In fact the provision of labour in the districts which suffer so regularly from floods and famines should properly be regarded as one of the most insistent duties of the Government. In all the circumstances, the Government is to be congratulated upon the establishment of the Bureau, and we have no doubt that under the able direction of Mr. Chang Chien, with expert foreign assistance, the waterways of China will become a gigantic factor in advancing the prosperity of the country.

CHINA'S RAILWAYS IN 1913.

The year 1913 will stand in China's railway history as the one of greatest advancement in the allotment of mileage and the extent of lines under construction since the first locomotive ran thirty-seven years ago with business intent on the Shanghai-Woosung railway,—a ten mile stretch, which was subsequently torn up and sent to Formosa by officials whose prejudice against steam traction was greater than their wisdom. The year that has just expired has seen approvals granted by the Government of the Republic for approximately 3,800 miles, a distance almost two-thirds as great as that of the railways that have been constructed and placed in operation since 1876, and work under construction to the extent of 2,600 miles. At the end of 1912 China had no more than 6,000 miles in operation with some 2,000 odd miles under construction. For a country with an area of

4,278,352 square miles (or, leaving out the dependencies, an area of 1,896,500 square miles for China Proper) and a population that is placed in round figures at 400,000,000, this is amazingly small and virtually insignificant when the vast areas under cultivation and the immense deposits of mineral wealth that await development are taken into consideration. But it looks as if the old days of violent opposition or passive resistance to modern progress have been left behind, and that men have come into power who realise the great and lasting value of rapid means of communication and mean to see their country profit by them. The activities in 1913 mark the turning point in Chinese opinion on the railway question, and 1914 can be looked to for startling advances along the line of providing for China a system which will permanently settle the burning question of the folly of haphazard construction, a question which has been thrashed threadbare by the ardent and active friends of the country. The Government lines in course of construction during the year were:

The Hukuang system	1,200 miles, commenced.
Kalgan-Tatung railway	100 „ practically completed.
Lung-Tsing-U-Hai railway	1,500 „ commenced.

Total under construction, 2,800 miles.

In addition to these railways, desultory work has been carried on by the Company having the right of construction of the southern section of the Canton-Hankow line.

The new lines arranged for during the year are as follow:—

Tatung to Chengtu	1,200 miles.
Pukow to Sinyang	300 „
Shasi to Singyi	800 „
Taonanfu to Jehoi and South Manchurian Railway feeders	1,200 „
Tsinanfu to Shunteh and Kaumi to Hanchwang	300 „
Total	3,800 miles.

NEW GERMAN RAILWAYS IN CHINA

On December 30 an agreement was signed at Peking by the representatives of the Republic of China and the German Minister in regard to important lines connecting with the Tsingtao-Tsinanfu Railway. One of these will run from Kaumi or Kaomi on the Tsingtao-Tsinanfu line to Ichowfu and thence on to Hanchuang, a station on the Tientsin-Pukow Railway on the Shantung border. The second line is an extension from Tsinanfu to some point on the Peking-Hankow line, to be decided upon after survey and investigation of the points most advantageous to railway building.

In an article on "Germany's Rights in Shantung," which appeared in the FAR EASTERN REVIEW in October last we foreshadowed the conclusion of this agreement. It was pointed out in that article that a considerable amount of traffic would be diverted to Tsingtao. The line linking up a point near Shuntefu to Tsinanfu will also obviously be of great assistance in building up the trade of Tsingtao. The *Frankfurter Zeitung* on December 24 confirmed the forecast made in this paper that these lines are to be State-owned, but German capital and materials have to be employed in their construction and the Chief Engineer and the General Manager are to be German subjects. Our contemporary added that it is estimated that the capital required will be seventy to eighty million marks.

THE HANKOW-ICHANG RAILWAY

It is stated that it has been decided that the terminus of the Hankow-Ichang Railway will be at Hankow and not at Kwangshui on the Peking-Hankow line. It is possible that the route may run parallel with the Peking line as far as Siaokan. That question has yet to be decided. The engineers have not decided either where the railway is to cross the river Han. The route of the railway beyond Ichang is also undecided. Mr. Beckwith, the late chief engineer, recommended a new route, but he has now left the service, and the survey is in the hands of the new acting chief, Mr. Randolph, who was Mr. Beckwith's assistant.

AT THE END OF THE YEAR

By the time this issue is in the hands of readers the year 1913 will have passed into the limbo, and, it is to be hoped will have carried with it all the evil influences which are believed by the superstitious to be attached to the number 13. When 1913 dawned it threatened to be a deplorably bad year for China. The International bailiffs were alleged to have been waiting for a chance to slip into possession, and pessimistic publicists unreservedly proclaimed a declaration of bankruptcy to be inevitable. Terrible as have been the financial straits of the Government it has managed to weather the year, and the bailiffs are still without. How desperate the needs of the country have been, however, were disclosed in the Government's financial statements published in the last issue of the REVIEW, and it is regrettable to realise that the new year comes without any practical diminution of the difficulties. In fact they have been intensified by a fatuous rebellion which has brought incalculable misery to hundreds of thousands of people and added immensely to the obligations of the State. China staggers under a gradually swelling load of loans, and that burden will have to be increased before it can be lightened. Every provincial treasury is still in a state of poverty, and the Central Government scarcely knows where to turn to find the ready means necessary for administrative purposes and for the settlement of debts due to foreign lenders. What the actual claims against the Government are no-one can authoritatively say. In addition to foreign and domestic loans of which the public are aware, there are numerous short term obligations of indefinite amounts. The Government itself set down its requirements for 1913 as \$646,350,000, while from October 1912 to June, 1914 a sum of about \$216,000,000 was needed for the repayment of principal and interest of loans other than railway loans, \$150,000,000 being for the repayment of long-period foreign loans and indemnities. The reorganisation loan of £25,000,000 provided the wherewithal to dispose of varied claims, but at the same time enhanced the difficulties of the country, as borrowing to repay borrowed money must always do, especially if adequate supplementary contributions are not being received from sources such as properly controlled and systematised provincial taxation.

From the end of 1911 to November 1913, the provinces contributed to the Central Government a paltry \$2,600,000, but there seems a probability that 1914 will witness a marked change in this direction. The President has been able by the suppression of the rebellion to consolidate his power in the provinces, and if the statements which he has made from time to time since he found it necessary to deprive the Kuo Ming-tang members of their seats in Parliament are to be taken as a criterion he is genuinely desirous of lifting China from the slough in which it has been wallowing since the Revolution of 1911-12. He has been able to place men upon whom he can personally rely in command of the various provinces, and with a reorganisation which he declares he will inaugurate should come a proper collection of taxes and a steady flow of revenues into the treasury of the Central Government. Until revenues do come in, however, the Central Government cannot be said to be controlling the country, nor can any hopeful view be entertained that China will emerge from her financial entanglements with what are described as her "sovereign rights" intact and secure from the control of creditors who have loaned great sums to the Government and who are being called upon for still further assistance. Negotiations have been proceeding for some time with the representatives of the Quintuple Group for another large loan, but even if an agreement were negotiated forthwith the state of the money markets of Europe is likely to preclude any large flotation for months to come. This one fact may be a Heaven-sent boon to China, for she will be compelled to put her house in order if she is to stave off the overshadowing foreclosure which has been the cause of so much anxiety to those in whose hands the reins of government are for the time being resting.

In the statement of the Government's policy published in our last issue several proposals were outlined for raising additional revenue, and the one point that was emphasised was that no foreign loan should be floated for administrative expenses. How long this intention can be adhered to remains to be seen.

To meet a deficit of some \$70,000,000, and also to provide further funds for Treasury purposes, proposals for the imposition of new taxes, a reduction of administrative expenses, and the raising of a domestic loan were elaborated, and while the estimates under the heading of new taxation seem to many to be doubtful of realisation the Cabinet itself is convinced that the major part of the sum of \$210,000,000, which they name as derivable from fresh taxation, can be secured. Mr. Liang Chi-chiao, who was largely instrumental in framing the General Policy, was able to reply to many critical questions in a distinctly optimistic vein. Any matters involving consideration of foreign interests, such as the proposed transit tax, would, he said, be discussed with the foreign elements concerned, and he had no doubt that all foreigners wishing well to China would assist her at this time by aiding in the rehabilitation of her finances. As for the proposed new taxes which would affect the people of China he felt that they would not be objected to, and that as soon as provincial officials loyal to the Central Government were installed they would be able to enforce whatever measures the Government might introduce. The Marriage Tax (estimated to yield \$3,000,000) would be a nominal charge for a certificate; the Stamp Tax (\$5,000,000) would be cheerfully paid as soon as it was understood; the Weights and Measures Tax (\$20,000,000) had been tried in the three Eastern Provinces and would gradually be accepted in the other provinces, and as for the Income Tax (\$10,000,000) it would mainly be collected from the salaries of officials by deduction. An interesting fact mentioned by Mr. Liang was that the Government intended to try to adopt the National Bank system of America in connection with which the Government proposed to make a strenuous effort to redeem the hundreds of thousands of depreciated bank notes either by retaining and destroying all notes paid in as taxes, by exchange of silver for notes at their market value, or by the outright purchase at a low rate with notes on the National Bank, branches of which institution would be established throughout the provinces with a head office in the capital.

The Maritime Customs

The Government has talked considerably of employing the best talent in the work of re-construction upon which it declares it has embarked, and evidence is awaited that this is being done. Whether or not proper foreign help will be enlisted is a moot point. It should be. The one bright spot in the financial gloom is the magnificent work done by foreigners in the Maritime Customs, and if the Chinese fail to awaken to the import of the lesson which the foreign control and administration of this splendid organisation teaches even their best friends must be driven to confess that there is no hope. Despite the travail through which the country has passed the Maritime Customs has been conducted in such a manner that its organisation has not become impaired in any way by local disturbances or conditions. Its collections in 1912 constituted a record. The year was one of grave concern to all commercial agencies, and politically there was chaos throughout the length and breadth of the land. And yet the Customs collected Haikwan (Customs) Taels 39,970,000, an increase over the previous best year of Tls. 3,800,000. That highly satisfactory result was a surprise to all who felt the acute pinch due to commercial dislocation, but it was a remarkable testimony to the vitality of China. It demonstrated beyond cavil that in the face of internal turmoil foreign trade flowed steadily and that carefully regulated safeguards over the revenues collected ensured their passage along the proper channels for full use in the interests of China. A similar story is repeated this year. There has been another outbreak of a serious kind; trade has received no encouragement such as can be expected from peaceful times, and, yet, the collections by the Customs are greater even than last year. The returns telegraphed to the Inspector-General at Peking show that a total of Tls. 43,960,000 (or at exchange $3/0\frac{1}{2} = £6,708,479$) were collected, being an increase of Tls. 4,000,000 over that of 1912. In the two years of the Republic the revenue from the customs has thus increased by more than Tls. 7,500,000. This year they have

been sufficient to meet the payment of all loans for which they are security, as well as the entire Boxer Indemnity charge for the year 1913.

This result eloquently speaks of the great possibilities for economic development which reasonable peace and even a modicum of progress in internal organisation would secure. The history of the Customs proves merely that honesty is the best policy for a State as it is for a man. There has been a steady increase in foreign trade, and the country has received the benefits from it by proper safeguards being placed upon collections. And the country will receive the benefit from all expansion so far as the Customs are concerned, a benefit which will be somewhat enhanced if the tariff is made, as is being requested by China, an effective five per cent. But the point is that China could, if she would, apply a system to other affairs similar to that which has made the Customs the splendid service it is. On the authority of one who is competent to speak from knowledge of China's conditions foreign administration is not needed so much as foreign assistance. In the salt and other revenue-producing services adequate account keeping, publicity of returns, and foreign guidance in various centres is all that is required. Revenues would thus be diverted from the pockets of people unentitled to them to the coffers of the State. The experience of the Customs is that control of receipts is the chief requisite. The system of administration of most of China's revenue collecting services is virtually effective enough. Administration by foreigners is not necessary. Assistance to systematise and check receipts are the primary needs, and by adopting these China could quickly demonstrate her ability to pay her debts and be independent of foreign loans for general administrative purposes.

The Salt Gabelle

To a large extent this is already being discovered in the Salt Gabelle. Collections from that potentially rich service had dwindled to a mere bagatelle so far as the state was concerned. As security for the Reorganisation Loan it was severely criticised as inadequate. Thousands of people unentitled to revenues were pocketing the receipts. The Central Government was getting virtually nothing. The advent, however, of Sir Richard Dane, as Adviser, combined with the appointment of Mr. Chang-hu as head of the Gabelle, has been responsible for striking results. Mr. Chang-hu has had ripe experience in China of the systems in vogue in several of the salt-producing districts, and Sir Richard Dane has had unique experience with the salt administration of India. Both brought to their task of reorganisation in China most excellent talent, and already the fruits of their efforts are being gathered by the country. As the salt revenue is the security for the Reorganisation Loan of £25,000,000 and other smaller obligations it is worthy of brief mention here what has been done during the past few months. In January last a Chief Inspectorate of Salt was established, consisting of one foreign and one Chinese Inspector-General and one Chinese and one foreign Deputy Inspector-General with staffs to carry out the routine work. The salt-producing districts in China were divided into ten, viz.,

Manchuria, Changlu, Shantung, Liang-hwai, Liang-chi, Fukien, Kwangtung, Szechuan, Ho-tung (Shansi) and Yunnan, and at each district head office a district inspectorate is to be established with one Chinese inspector and one foreign co-inspector in charge of the working staff. In April last District Inspectorates were created for Manchuria, Changlu, Shantung, Liang-hwai, Liang-chi and Fukien, and later on similar organisations were opened in Kwangtung and Ho-tung districts, while Yunnan and Szechuan are now in course of establishment. The various inspectorates which have taken up their duties have entered into the very difficult work of straightening out an almost impossible entanglement in which the rights of the Government have been lost to view by many individuals whose chief idea of salt gabelle revenue is that it has been forgotten by the Government and therefore may be collected and utilised for their special benefit. This is

one of the grave evils of the Revolution, and to compel the voluntary rendering unto Cæsar that which belongs to Cæsar is the chief difficulty of the Central Government at the moment. But it is gradually being done, and the various inspectors deserve every credit for diverting the flow of revenue—if only partly from illegitimate courses into the proper channels. Substantial collections have been made. Each inspectorate is held responsible for the revenue. They are to collect taxes, make deposits and proper disbursements, audit and report the accounts and make up statistics. Since May 21 last, on which date the Quintuple Loan bonds (which are secured upon salt revenues) were first issued the Government has done much to improve the organisation, and substantial revenues have been deposited in the various banks in accordance with loan agreement. Between May 21 and the end of September Taels 3,423,000 and Mex. \$9,447,000 were collected, and on December 18 the total holdings by Group banks was approximately Taels 4,370,000. This result must be regarded as highly satisfactory when it is remembered that reforms have not yet been thoroughly introduced. Sir Richard Dane has travelled and reported upon the Manchurian, Shantung and Chang-lu salt administrations, and will act similarly with the others.



MR. CHANG-HU, Head of the Salt Gabelle and Vice-Minister of Finance. A short reference to his official career appears elsewhere.

Insofar as actual reform of taxation is concerned it will be gradually introduced, the system to be adopted being collection of taxes at the salt-producing districts. This system will be introduced at Changlu, and to facilitate matters the salt-producing and salt-consuming sections of the country will be converted into two divisions. The first division will comprise the salt-producing districts of Fengtien, Chihli, Shantung, Shansi, Kansu, Shensi and Hwaipei in Kiangsu, and the salt-consuming districts of Kirin, Hei-lung-kiang, Honan and northern Anhui; and the second division will be the salt-producing districts of Hwainan in Kiangsu, Liang-chih, Fukien, Kwangtung, Szechuan and Yunnan, and the salt-consuming districts of southern Anhui, Kiangsi, Hupeh, Hunan, Kwangsi, and Kweichow. The old system of tax collection will be continued in the second division until July next, the tax imposed being \$2.50 on every hundred catties of salt, but in the first

division it will be \$2 per hundred catties. The collection of the tax shall be completed in one payment at the place of production without regard to the destination to which the salt is transported, and no further taxes shall be levied. For the purposes of taxation scales, weights and measures are to be standardised, but pending their promulgation, the "Ssuma" scales will be used. By these scales 16.8 ling equal one catty; 100 catties equal one picul, and 16 piculs equal one English ton. The provisions of the regulations briefly referred to above are to be carried into effect in all the provinces of China in which salt is produced or consumed, excepting Mongolia, Chinghai, Sinkiang (New Dominion),

Tibet and Leased Territories, which are considered as special districts. The activities along reform lines are distinctly encouraging and indicate that the Government is earnest in its efforts to place this valuable source of revenue upon a sound foundation, and now that the President is centralising the power of the Government there is every reason to suppose that progress will be real if political factions can be persuaded that what is being done is for the best interests of the people.

It is of interest to note that at the end of the year \$9,000,000 from salt revenue had been lodged in the Group banks, \$1,000,000 of which came from Kwangtung province.

"STARVING CHINA'S RAILWAYS"

The following is a free translation of a letter that we have received from the Premier, Mr. Hsiung Hsi-ling:—

In the FAR EASTERN REVIEW recently appeared an article criticising the administration of the Chinese Government Railways. This article had special relation to the provision of additional rolling stock. The Government recognises that the extension of all railway traffic depends mostly upon the provision of sufficient cars; that may be termed a fundamental requirement.

Of late in regard to any application for the provision of extra cars the Government has done its best to comply therewith except when the request has come at a time of financial stress.

Since the establishment of the present Ministry the revenue raised from the different railways during the first and second years of the Republic for the purchase of extra cars has amounted to over \$15,000,000, which is double that raised in the time of the Yen Chuan-pu; still there appears to be an insufficient number of cars to meet the requirements of the traffic. The reasons for this are:—

- (1). The lines are constantly being extended and the cars cannot keep pace with this growth.
- (2). The transport of soldiers and military supplies occasions delays to ordinary merchandise.

It is impossible at present to devote more money than is being allotted as shown above for the purchase of additional cars, as otherwise it would be difficult to make the necessary repayments of interest and capital on foreign and domestic railway loans. Other departments are in need of money, and if additional amounts were demanded for purchase of cars difficulties would be created.

The FAR EASTERN REVIEW also suggested that the Government relied wholly on the revenue from the various railways under the Board of Communications for revenue for general purposes. This is not so, although the Government was sometimes in need of railway revenues for other purposes. The Ministry of Finance does not help the Board of Communications to the extent of one cash; how then can the Board get money to meet other demands than those for railway requirements?

Table showing the extra purchases of cars by the Government Railways for 1st and 2nd Year of the Republic:

	1st year	2nd year
Peking-Mukden Railway	\$ 787,540	\$ 670,000
Peking-Hankow	\$4,082,300	\$1,570,303
Tientsin-Pukow	\$1,767,070	\$ 158,100
Cheng-Tai	\$ 340,000	\$ 600,000
Tao-Tsiu	\$ 26,061	\$ 168,000
Kuang-Chu	\$ 503,700	\$ 508,241
Chi-Shang	\$ 818,667	\$ 465,400
Chu-Ping	\$ 120,000	\$ 42,000
Peking-Kalgan	\$1,150,000	\$ 540,000
Shanghai-Nanking	.....	\$ 978,800
Grand Total.....	\$15,294,182	

JAPAN'S MACHINERY IMPORTS

The U. S. Consul-General at Yokohama, Mr. Thomas Sammons, writes in *Daily Consular and Trade Reports*:—

Japan is buying a steadily increasing amount of foreign machinery and engines, the total purchases for 1912 aggregating \$14,175,689.

During the past three years the sale of products of this kind that were manufactured in the United States nearly doubled, the increase in 1911 over 1910 being upward of \$1,300,000. Nevertheless, it is well known among the expert representatives of the various competing countries that in some lines—particularly in cement and paper-making machinery—European manufacturers have of late been securing orders that were actively solicited by American concerns. In other lines, however, the American manufacturers have steadily increased their exports thither, as is shown by the fact that their total sales to Japan in 1912 amounted to \$3,442,324, as compared with \$3,144,499 in 1911.

TOTAL IMPORTS—TRADE IN DYNAMOS AND MOTORS

The total importations of machinery and engines into Japan for 1910, 1911, and 1912 may be summarized as follows:—

Imported from	1910	1911	1912
United States..	\$1,897,657	\$3,144,499	\$3,442,324
Belgium	41,414	43,117	66,533
Germany	1,152,926	3,282,326	3,214,779
Great Britain..	4,656,470	6,193,616	7,104,011
Other countries	172,688	312,428	348,342
Total....	7,838,145	12,982,986	14,175,980

Of dynamos, motors, and transformers nearly 50 per cent. of Japan's total imports in 1912 came from the United States. The competition in this particular line has been decidedly brisk, a summary of the results for three years being as follows:

Imported from	1910	1911	1912
United States..	\$449,256	\$901,974	\$712,060
Germany	315,932	1,372,046	535,893

Great Britain..	304,236	538,219	338,164
Other countries	22,153	31,937	6,763
Total....	1,091,577	2,844,170	1,592,880

TURBINES, ETC.—SEWING MACHINES

The total imports of metal and wood working machinery into Japan reached nearly \$2,000,000 in 1912, Great Britain leading with \$1,117,421, the United States coming next with \$510,103, and Germany being represented by \$307,670. The bulk of the spinning machinery used in Japan continues to come from England (\$702,423 out of a total of \$897,672), although American manufacturers are increasing their sales. Germany has a large share of the water turbine and Pelton wheel trade in Japan, the steam turbine business being divided between the United States, England, and Germany. Of Japan's pump imports during 1912 England supplied \$176,220 worth, the United States \$80,208, and Germany \$67,952.

Of a total of \$602,782, representing Japan's purchases of foreign sewing machines, the United States is credited with \$458,208, British America (also representing American interests) \$105,903, Great Britain \$26,589, and Germany \$10,216. German sewing machines, even though cheap, are not proving satisfactory in Japan, and the trade has steadily declined during the past few years. At the same time American manufacturers, with up-to-date American representation on the spot, have increased their sales from \$160,126 in 1910 to \$458,208 in 1912. Japan's imports of sewing machines for the last three years were as follows:

Imported from	1910	1911	1912
United States....	\$160,126	\$410,334	\$458,208
Great Britain....	9,171	24,591	26,589
Germany.....	31,507	23,326	10,216
British America..	.....	62,981	105,903
Others	37,495	939	1,770
Total.....	238,299	522,171	602,782

OTHER ARTICLES THAT FIND A MARKET

Other articles in the machinery, engine, and boiler class that find a market in Japan, together with the total imports during 1912, are: Steam boilers, \$585,008; blowing machinery, \$233,497; cranes, \$452,866; dynamos, combined with motive machinery, \$469,161; gas and oil engines, \$692,310; steam engines, \$179,921; gas compressors, \$212,525; locomotives \$399,158; paper-making machinery, \$67,750; tissue finishing machinery, \$161,011; weaving machinery, \$273,024; portable steam engines and road rollers \$16,000; blocks, and chain blocks, \$48,000; diving apparatus, \$12,000; hydraulic presses, \$45,000; knitting machines, \$34,000; dyeing and bleaching machines, \$3,400; sugarmaking machines, \$4,300; ice-making machines, \$65,000; printing machines, \$33,000.

In many instances the Japanese are themselves manufacturing machinery, and to that end considerable quantities of machine tools and appliances are being imported.

The Russian Government has granted to Vickers, Limited, in conjunction with the leading banks of St. Petersburg, a concession for the establishment of extensive new gun works at Tsaritsyn, on the banks of the Volga. Orders to the value of about £1,000,000 have already been received.

CHINA'S RAILWAY BUDGET

ESTIMATES FOR THE YEAR BEGINNING JULY, 1913, AND ENDING JUNE, 1914

The following is a translation of the Budget for the railways under the control of the Government of the Republic of China for the year beginning with July, 1913, and ending with June, 1914. The document was prepared by the Railway Bureau of the Board of Posts and Communications.

The system of railways at present under the control of the Government were constructed mainly with the aid of foreign loans contracted during the Ching Dynasty. In accordance with the agreements under which the loan monies were obtained the supervision of construction, traffic, and accounting have been in the hands of foreigners, and the Government has, therefore, not been able fully to exercise its rights—and will be unable to do so until the loans are paid off. Difficulties have consequently been great in the preparation of a budget, and we feel that the present one is not so satisfactory as it might otherwise have been. Uniformity in data secured has been impossible owing to the fact that a different system of accounts exists on every railway, but prior to the compilation of this budget temporary uniformity was attempted by the despatch of forms to the various railways to be filled in. Though that design appeared to be desirable it did not meet with approval in all quarters.

This Budget has been made up from the figures of the previous year. While formerly the remittances made to the Ministry of Communications by various railways were devoted to the purposes of the railways so contributing, they have of late been utilised by the Ministry for the maintenance of the whole Board. Under the heading of Traffic there appears an increase. As funds for the administration of the various railways have been provided for in the various agreements they have been entered under the heading of traffic expenditure. Likewise the funds necessary for the maintenance of students and railway schools are entered under the same heading. Most of the materials for railway construction have been purchased from foreign countries, the lack of development of Chinese industries preventing purchases being made to any great extent in this country.

Under the heading of Traffic the receipts from the various railways are estimated at \$45,258,541, and the expenditure is estimated at \$34,355,052, showing an estimated surplus of \$10,933,489, which, in comparison with the previous year (July, 1912, to June, 1913) is an increase of about \$6,600,000.

The newly-opened Tientsin-Pukow railway showed a deficit of \$1,930,000 for the previous year, but it is estimated that there will be a surplus of \$8,000,000 for the year under consideration.

Under the heading of Capital the total receipts are estimated at \$1,938,920, while the expenditure is placed at \$22,146,622. The Shanghai-Nanking railway is not considered in this item. There is a deficiency of \$20,203,702, but that includes the repayment of something over \$4,020,000 on behalf of the Peking-Mukden, Peking-Hankow, and Shansi railway loans; construction expenses of more than \$2,700,000 for the Kalgan-Sui-yuan extension; and expenses of over \$3,680,000 for completion of work on the Tientsin-Pukow and Kirin-Changchun lines. The remaining \$10,000,000 will be devoted to the extension of construction work on branches, the building of cars and the purchase of railway materials.

As figures in connection with the various railways are calculated mostly in pounds sterling or francs it is impossible, owing to variations in exchange, to make the figures tally with the actual ones. Following are the estimates for the various railways:—

ESTIMATED TRAFFIC RECEIPTS

Ching-Feng	Line (Peking-Mukden)	\$ 12,180,000
Ching-Han	" (Peking-Hankow)	15,651,200
Ching-Pu	" (Tientsin-Pukow)	7,349,140
Cheng-Tai	" (Shih Chia-chuang to Taiyuanfu)	2,434,000
Tao-Ching	" (Taokow-Chinghua)	563,100
Hu-Ning	" (Shanghai-Nanking)	3,025,000
Kuang-Chiu	" (Canton-Kowloon)	724,000
Chi-Chang	" (Kirin-Changchun)	506,339
Chu-Ping	" (Chuchow-Pinghsiang)	579,230

Ching-Chang
Chang-Sui

Line (Peking-Kalgan)	\$1,858,121
" (Kalgan-Suiyuan)	388,411
Total	\$ 45,258,541

ESTIMATED TRAFFIC EXPENDITURE.

Line (Peking-Mukden)	\$5,743,652
" (Peking-Hankow)	8,350,768
" (Tientsin-Pukow)	9,286,409
" (Shansi)	1,821,750
" (Taokow-Chinghua)	811,830
" (Shanghai-Nanking)	3,486,000
Kuang-Chiu	
Line (Canton-Kowloon)	1,629,131
Chi-Chang	
Line (Kirin-Changchun)	103,033
Chu-Ping	
Line (Chuchow-Pinghsiang)	421,353
Ching-Chang	
Line (Peking-Kalgan)	1,038,840
Chang-Sui	
Line (Kalgan-Suiyuan)	349,757
Total	\$ 34,072,523

EXTRAORDINARY TRAFFIC EXPENDITURE.

Ching-Feng	
Line (Peking-Mukden)	\$ 137,029
Kuang-Chiu	
Line (Canton-Kowloon)	3,500
Ching-Chang	
Line (Peking-Kalgan)	62,000
Chang-Sui	
Line (Kalgan-Suiyuan)	50,000
Total	\$ 252,529

The difference between the Traffic Receipts and Expenditure shows a surplus of \$10,933,489.

EXTRAORDINARY CAPITAL RECEIPTS

Ching-Feng	
Line (Peking-Mukden)	\$ 20,000
Ching-Han	
Line (Peking-Hankow)	21,000
Ching-Pu	
Line (Tientsin-Pukow)	520
Hu-Ning	
Line (Shanghai-Nanking)	1,390,000
Kuang-Chiu	
Line (Canton-Kowloon)	500,000
Chu-Ping	
Line (Chuchow-Pinghsiang)	7,400
Total	\$ 1,938,920

ANNUAL CAPITAL EXPENDITURE.

Ching-Feng	
Line (Peking-Mukden)	\$ 670,000
Ching-Han	
Line (Peking-Hankow)	2,870,000
Cheng-Tai	
Line (Shansi)	483,000
Total	\$ 4,023,000

ANNUAL EXTRAORDINARY CAPITAL EXPENDITURE

Ching-Feng	Line (Peking-Mukden)	\$ 1,309,280
Ching-Han	" (Peking-Hankow)	6,833,252
Ching-Pu	" (Tientsin-Pukow)	2,494,950
Cheng-Tai	" (Shansi)	810,210
Tao-Ching	" (Taokow-Chinghua)	186,000
Hu-Ning	" (Shanghai-Nanking)	1,153,400
Kuang-Chiu	" (Canton-Kowloon)	562,041
Chi-Chang	" (Kirin-Changchun)	1,190,700
Chu-Ping	" (Chuchow-Pinghsiang)	224,000
Ching-Chang	" (Peking-Kalgan)	662,068
Chang-Sui	" (Kalgan-Suiyuan)	2,702,721
Total		\$ 18,128,622

The difference between Capital Receipts and Expenditures shows a deficit of \$20,212,702.



Vice-President LI YUAN-HUNG, whose departure from Wuchang to Peking was regarded as one of the most significant events that occurred during December. His departure from Wuchang was held to indicate a belief that the "strong hand" was no longer required there, and that the rumors of friction between him and President Yuan Shih-kai were without foundation.

July 2nd year
to June 3rd year

BUDGET ON TRAFFIC AND CAPITAL OF THE GOVERNMENT RAILWAYS

(showing their
profit and loss).

Names of Lines	Traffic		Capital		Traffic and Capital	
	Profit	Loss	Profit	Loss	Profit	Loss
Ching-Feng	\$6,299,319			\$1,959,280	\$4,340,039	
Ching-Han	\$7,300,482			9,682,252		\$2,381,820
Ching-Pu		\$1,937,269		2,494,430		4,431,699
Cheng-Tai	612,250			1,293,210		680,960
Tao-Ching		248,730		186,000		434,730
Hu-Ning		461,000	\$236,600			224,400
Kuang-Chiu		908,631		62,041		970,672
Chi-Chang		596,694		290,706		1,787,394
Chu-Ping	177,877			216,600		38,723
Ching-Chang	707,281			662,068	45,213	
Chang-Sui		11,346		2,702,721		2,714,067
Total	\$15,097,159	\$4,163,670	\$236,600	\$20,149,302	\$4,385,252	\$13,664,465
Comparison with 1912-13	\$10,933,489			\$20,212,702		\$9,279,212

PEKING-MUKDEN RAILWAY

The actual expenditure during the previous three years is taken as a basis. In this budget the estimated receipts under the heading of Traffic is \$10,180,000, a decrease when compared with the previous year. The ordinary and extraordinary expenditure under Traffic are estimated to amount to a little over \$5,880,000. This includes \$4,140,000 under the headings of General, Traffic, Shop-working and Maintenance, which in comparison with the previous year shows an excess of \$70,000, due to the fact that costs of materials to be purchased have been fixed on a very conservative basis, owing to the gradual rise of prices. Extraordinary expenditure is estimated at \$137,029, which is to be devoted solely to workshop and maintenance purposes.

Estimated receipts and expenditure show a profit of a little over \$4,290,000, of which \$1,950,000 is estimated as Capital expenditure.

Owing to financial stringency restrictions in the way of furnishing rolling stock and expenditure on workshops and maintenance have been compulsory. We have been compelled to leave out of consideration in this budget any matters that might be postponed. With regard to rolling stock, however, it is impossible to delay further, and the cost will be spread over several years. A sum of \$1,130,000 has been estimated for rolling stock and engineering purposes, and \$670,000 will go to the repayment of loans.

Expenditure on maintenance is fixed at about \$100,000.

DETAILS OF ESTIMATED TRAFFIC RECEIPTS.

1. Coaching	Total	\$ 12,000,000
(a) Passengers		5,400,000
(b) Freight		6,600,000
2. Miscellaneous	Total	\$ 180,000
(a) Rental		150,000
(b) Interest		20,000
(c) Miscellaneous		10,000

DETAILS OF ESTIMATED TRAFFIC EXPENDITURE

1. General	Total	\$ 833,710
(a) Salaries or wages		429,800
(b) Running expenses		120,000
(c) Miscellaneous		283,910
2. Traffic	Total	\$ 680,000
(a) Salaries or wages		546,000
(b) Running expenses		72,000
(c) Miscellaneous		62,000
3. Workshop	Total	\$ 1,823,400
(a) Salaries or wages		308,000
(b) Running expenses		657,700
(c) Maintenance		802,700
(d) Miscellaneous		55,000
4. General Maintenance	Total	\$ 1,103,742
(a) Salaries or wages		178,110
(b) Running Expenses		7,350
(c) Maintenance		847,577
(d) Miscellaneous		70,705
5. Interest on Loans.	Total	\$ 1,118,000
(a) British and Chinese Corpora-		
tion	{ 24th	\$1,100,000
	{ 25th	
(b) South Manchuria	{ 6th	18,000
Railway	{ 7th	
6. Running Expenses for the Ministry	Total	\$ 67,200
of Communications		
7. Educational Fee for Students abroad.	Total	\$ 117,600
(a) European and American Stu-		
dents		42,000
(b) Tang-Shan Railway and Min-		
ing Institution		75,600

The total expenditure under Traffic is estimated at \$5,743,652

DETAILS OF ESTIMATED EXTRAORDINARY EXPENDITURE

	Total	\$137,029
(a) Workshop		\$ 57,000
(b) Maintenance		80,029

The grand total of estimated traffic expenditure reaches \$5,880,681

The difference between the estimated Receipts and Expenditure on traffic shows a profit of \$6,299,319

DETAILS OF ESTIMATED EXTRAORDINARY CAPITAL RECEIPTS

1. Sale of Waste or useless stuff	Total	\$ 20,000
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DETAILS OF ESTIMATED CAPITAL EXPENDITURE

1. Repayment of Loans	Total	\$ 670,000
(a) British and Chinese Corpora-		
tion, 9th		650,000
(b) South Manchuria Railway		
Co., 6th and 7th		20,000

DETAILS OF EXTRAORDINARY CAPITAL EXPENDITURE

1. Car Buildings	Total	\$ 670,010
(a) Locomotives		181,210
(b) Passenger Cars		143,000
(c) Goods wagons		345,800
2. Machinery supplies	Total	\$ 81,300
(a) Tang-shan Workshop		68,400
(b) Maintaining Department		1,200
(c) Telegraphic		11,700
3. Extension of Engineering work.		
(a) Engineering work for internal		
sections		156,480
(b) Engineering work for external		
sections		52,850
(c) Engineering work for eastern		
sections of Feng-Tien		98,640
(d) Removing the city wall at		
Cheng-Yang-Mong and fill-		
ing up the moat there-		
about		250,000

The estimated extraordinary Capital expenditure totals \$1,309,280. The grand total reaches \$1,979,280. The difference between the annual Capital Receipts and Expenditure shows a deficiency of \$1,959,280.

PEKING-HANKOW RAILWAY

Traffic receipts are estimated at \$15,651,200 which, in comparison with the previous year, will give a surplus of \$3,000,000.

Expenditure is estimated at \$8,350,768 and exceeds that of the previous year under "General Expenses" by \$70,000, "Traffic Expenses" by \$100,000 and "Maintenance Expenses" by \$200,000.

Extraordinary Capital expenditure is estimated at \$6,800,000. As we have to make the railway prosperous we have to make ample provision for operating expenses.

The estimates of receipts and expenditure shows a profit of \$7,300,432.

ESTIMATED TRAFFIC RECEIPTS

1. Coaching receipts	Total	\$ 15,332,750
(a) Passengers		3,630,750
(b) freight		11,696,000
2. Miscellaneous receipts	Total	\$ 318,450
(a) Rental		263,680
(b) Interest		25,000
(c) Miscellaneous		29,770
The total amounts to		15,651,200

ESTIMATED TRAFFIC EXPENDITURE

1. General expenses	Total	\$ 605,486
(a) Salaries or wages		360,580
(b) Running expenses		64,586
(c) Miscellaneous		180,320
2. Traffic expenses	Total	\$ 891,872
(a) Salaries or wages		497,040
(b) Running expenses		154,530
(c) Miscellaneous		240,302
3. Workshop expenses		1,613,010
(a) Salaries or wages		252,369
(b) Running expenses		627,780
(c) Reserve expenses		672,120
(d) Miscellaneous		60,750
4. Maintaining expenses		1,643,400
(a) Salaries or wages		516,000
(b) Running expenses		14,400
(c) Reserve expenses		994,800
(d) Miscellaneous		118,200
5. Interest on domestic and foreign loans		3,478,400

(a) Hongkong Shanghai, and French banks	2,563,000
(b) Interest on loan from the Ministry of Communications for the redemption of the railway	411,000
(c) Interest on Szechuan-Hankow Railway loan	102,900

According to the agreement the repayment of the capital shall be commenced in 1912, but owing to financial stringency, that cannot be done.

(d) Interest on domestic loan	401,500
6. Contribution for the Ministry of Communications	67,200
7. Contribution for students abroad	51,400
(a) For European students	42,800
(b) For students in other countries	8,600

The above-stated estimated expenditure totals \$8,350,768.

ESTIMATED EXTRAORDINARY CAPITAL RECEIPTS

1. Waste material sold	21,000
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ESTIMATED CAPITAL EXPENDITURE

1. Repayment of loans	2,870,000
(a) Repayment to the Ministry of Communications of the loan for the redemption of this railway	1,370,000
(b) Due Repayments for the previous two terms of the loan made from the Ministry for the redemption of this railway amounting to \$2,740,000 have not been made on account of financial stringency. These two repayments are still to remain in this term, so they are not entered or fixed under the heading of Capital Annual expenditure of this budget.	
(c) Repayment of Szechuan-Hankow Railway loan	\$1,500,000
The above-stated estimated Capital expenditure totals	\$2,870,000

ESTIMATED EXTRAORDINARY CAPITAL EXPENDITURE

1. Addition of Rolling Stock	\$ 1,510,302
(a) Locomotives	108,300
(b) Passenger and Service Cars	378,950
(c) Goods wagons	1,023,053
2. Machinery supplies	923,233
(a) Traffic Department	46,725
(b) Workshop	178,600
(c) Maintenance Department	86,950
(d) Balance due on machinery supplies ordered in 1912, amounting to	615,958
3. Extension of engineering works	2,164,699
(a) General office	17,500
(b) Traffic Department	670,005
(c) Workshop	97,544
(d) Maintenance Department	129,650

(e) Pulling down the city wall at Ching-Yang-Mong, and filling up the moat thereabout	250,000
(f) Precaution expenses for the Huang-ho (Yellow River) bridge	1,000,000
4. Branch Construction	2,100,000
(a) Projected line between Chow-kiahow and Yea-chen	1,750,000
(b) Projected line between Chang-Sin-Tien and Ta-Whe-chuang	350,000
5. Balance due on land purchased at Hupeh	122,017
6. Customs duties on railway materials	8,000

The total of estimated extraordinary expenditure is \$6,833,252.

The grand total of the estimated expenditure under the heading of capital is \$9,703,252.

The difference between the estimated receipts and expenditure on capital gives a deficit of \$9,682,252



MR. LIANG CHI-CHAO, Minister of Justice, who prepared the comprehensive statement of China's policy which appeared in the November issue of the FAR EASTERN REVIEW.

TIENTSIN-PUKOW RAILWAY.

ESTIMATED TRAFFIC RECEIPTS

1. Coaching	Total	\$ 7,177,780
(a) Passenger Cars		3,186,620
(b) Goods		3,991,260
2. Miscellaneous	Total	\$ 171,260
(a) Rental		25,087
(b) Interest		Nil
(c) Miscellaneous		146,173

The total traffic receipts is estimated at \$ 7,349,140

ESTIMATED TRAFFIC EXPENDITURE

1. General expenses	Total	\$ 1,127,543
(a) Salaries or wages		688,633
(b) Running expenses		114,048
(c) Miscellaneous		324,862
2. Traffic expenses	Total	\$ 638,325
(a) Salaries or wages		474,191
(b) Running expenses		92,014
(c) Miscellaneous		72,120
3. Workshop	Total	\$ 1,671,094
(a) Salaries or wages		294,604
(b) Running expenses		664,322
(c) Reserve expenses		660,268
4. Maintenance expenses	Total	\$ 1,089,977
(a) Salaries or wages		458,944
(b) Running expenses		30,220
(c) Reserve expenses		582,275
(d) Miscellaneous		18,538
5. Interest on Loan	Total	\$ 4,699,470
(a) German-Chinese Bank		3,225,000
(b) Chinese Central Rail-Co.		1,474,470
6. Contribution for the Ministry of Communications	Total	\$ 60,000

The total amount estimated for traffic expenditure is \$9,286,409.

The difference between the estimated traffic receipts and expenditure shows a deficit of \$1,937,269.

ESTIMATED EXTRAORDINARY CAPITAL RECEIPTS

1. Sale of iron and wooden oil barrels.	\$ 520
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ESTIMATED EXTRAORDINARY CAPITAL EXPENDITURE

1. Increase of Rolling Stock	Total	\$ 958,100
(a) Locomotives		300,000
(b) Passenger Cars		312,000
(c) Goods wagons		262,500
(d) Increase of rolling stock for the southern Section		83,600
2. Machinery Supplies	Total	\$ 16,000
(a) Machine tools for engine-repairing purpose for Tsenan Workshop		5,000
(b) Machine tools for Locomotives and Passenger and Goods wagons for the Southern Section		11,000
3. Construction work	Total	\$ 1,520,850
(a) Tsinan-fu and Pukow		1,440,850
(b) Along the whole line		80,000

The above-quoted extraordinary capital expenditure amounts to \$2,494,950.

The difference between estimated Receipts and Expenditure on capital shows a deficit of \$2,494,430.

Explanation.—1. The construction work of this line has just been completed. The unification of the northern and southern sections has now been completed, but it is impossible to estimate receipts, except on the basis of the present current receipts.

2. Since traffic has only recently been opened on the whole line, the estimate of expenditure is approximate.

SHANSI (CHENG-TAI) RAILWAY

ESTIMATED TRAFFIC RECEIPTS

1. Coaching	Total \$ 2,400,000
(a) Passengers	500,000
(b) Freight	1,900,000
2. Miscellaneous	Total \$ 34,000
(a) Rental	26,000
(b) Interest	4,500
(c) Miscellaneous	3,500
The total amounts to \$2,434,000	

ESTIMATED TRAFFIC EXPENDITURE

1. General expenses	Total \$ 186,900
(a) Salaries or wages	134,700
(b) Running expenses	33,900
(c) Miscellaneous	18,300
2. Traffic Expenses	Total \$ 156,300
(a) Salaries or wages	126,500
(b) Running expenses	11,200
(c) Miscellaneous	18,600
3. Workshop expenses	Total \$ 397,550
(a) Salaries or wages	120,700
(b) Running expenses	140,350
(c) Reserve expenses	117,200
(d) Miscellaneous	19,300
4. Maintenance expenses	Total \$ 255,700
(a) Salaries or wages	166,000
(b) Running Expenses	1,700
(c) Reserve expenses	112,500
(d) Miscellaneous	15,500
5. Interest on Loans	Total \$ 800,000
6. Contribution for the Ministry of Communications	Total \$ 20,160
7. Contribution for support of Students	Total \$ 5,140
(a) Students abroad	3,140
(b) Railway school	2,000

The above-quoted Expenditure totals \$1,821,750

The difference between receipts and expenditure shows a profit of \$612,250

ESTIMATED CAPITAL EXPENDITURE

1. Repayment of Loan	Total \$ 483,000
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ESTIMATED EXTRAORDINARY CAPITAL EXPENDITURE

1. Increase of Rolling Stock	Total \$ 600,000
(a) Locomotives	250,000
(b) Passenger cars	Nil.
(c) Goods wagons	350,000
2. Increase of Machinery Supplies	Total \$ 125,810
(a) (旋盤水磅)	13,400
(b) Rails	18,710
(c) Iron Pipes	3,700
(d) Store Materials	70,000
(e) Funds for precaution	20,000
3. Extension of construction work	Total \$ 44,400
(a) Station work	9,280
(b) Increase and repairs of buildings for the line	30,750
(c) Engineering work	4,370
4. Extraordinary expenses	Total \$ 40,000
(a) Repairs of Locos	40,000

The above-quoted annual extraordinary capital expenditure totals \$810,210.

The total amount of the estimated capital expenditure is \$1,293,210.

Explanation.—The annual receipts, in comparison with the estimate for 1912, shows an increase of a little over \$300,000, but in comparison with the actual receipts for 1912 is a decrease of some ten thousands of dollars. The present increase is due to the fact that we have over-

estimated the transportation of coal and under-estimated freight from cereals. The increase of six locomotives and one hundred coal wagons under the heading of capital expenditure is for the purpose of developing traffic. In viewing the progress of the traffic business, and the prosperity of the transportation affairs of this line the extension of construction work therefrom is inevitable. An increase of turntables and other important adjuncts are still under consideration and negotiation, so they have not been estimated in this budget.

TAOKOW-CHINGHUA RAILWAY.

ESTIMATED TRAFFIC RECEIPTS.

1. Coaching Receipts	Total \$ 555,000
(a) Passengers	100,000
(b) Freight	455,000
2. Miscellaneous.	Total 8,100
(a) Rental	8,000
(b) Interest	Nil.
(c) Miscellaneous	100
The above-quoted Receipts total 563,100	

ESTIMATED TRAFFIC EXPENDITURE.

1. General expenses.	Total 75,120
(a) Salaries or wages	56,360
(b) Running expenses	7,160
(c) Miscellaneous	11,600
2. Traffic expenses	Total 45,500
(a) Salaries or wages	29,000
(b) Running expenses	10,500
(c) Miscellaneous	6,000
3. Workshop expenses	Total 124,000
(a) Salaries or wages	24,600
(b) Running expenses	43,200
(c) Reserve expenses	56,200
(d) Miscellaneous	Nil.
4. Maintenance expenses	Total 149,500
(a) Salaries or wages	9,000
(b) Running expenses	1,000
(c) Reserve expenses	138,500
(d) Miscellaneous	1,000
5. Interest on Loans	Total 408,110
(a) Foh Company (福公司)	401,000
(b) Ministry of Communications	7,110
6. Contribution for the Ministry of Communications	9,600

The above-quoted expenses total \$811,930

The difference between receipts and expenditure under the heading of Traffic shows a deficit of \$248,730

ESTIMATED EXTRAORDINARY CAPITAL EXPENDITURE.

1. Increase of Rolling stock	Total \$ 168,000
(a) Locomotives	Nil.
(b) Passenger Cars.	Nil.
(c) Goods wagons	168,000
2. Extension of construction work	Total \$ 18,000
(a) Station work	18,000

The above-quoted extraordinary expenditure totals \$186,000

Explanation.—The estimate of traffic receipts of \$516,500 made for July 1912 to June 1913, is exceeded by \$39,000 in the estimate for 1913-14 that being due to an increase in the receipts from passengers.

3. The estimate of expenditure made for July 1912 to June 1913 amounted to about \$880,000. We make it less by \$70,000 for this term.

SHANGHAI-NANKING RAILWAY.

This line is in close competition with navigation by numerous waterways. We have tried to devise means to divert traffic from those routes, but financial stringency has prevented an adequate development of transportation facilities in the shape of an increase of rolling stock, etc. The various items under the heading of Capital were included in last estimate, but so far they have not been carried out. The most important items are the increase of rolling stock and the construction of sub-lines at Nanking station. Work at Chinkiang station is also important. The expenditure now estimated exceeds that of the previous year by \$80,000, which amount is for the erection of a goods depôt at Nanking station.

ESTIMATED TRAFFIC RECEIPTS.

1. Coaching	Total \$ 2,975,000
(a) Passengers	2,300,000
(b) Freight	675,000
2. Miscellaneous	50,000

Grand Total \$ 3,025,000

ESTIMATED TRAFFIC EXPENDITURE.

1. General expenses	Total \$	424,500
(a) Salaries or wages		238,000
(b) Running expenses		24,500
(c) Miscellaneous		162,000
2. Traffic expenses.	Total \$	464,500
(a) Salaries or wages		260,000
(b) Running expenses		82,500
(c) Miscellaneous		122,000
3. Workshop expenses	Total \$	654,000
(a) Salaries or wages		66,000
(b) Running expenses		379,500
(c) Reserve expenses		196,500
(d) Miscellaneous		12,000
4. Maintenance Expenses	Total \$	282,000
(a) Salaries or wages		72,300
(b) Running expenses		4,100
(c) Reserve expenses		200,200
(d) Miscellaneous		5,400
5. Interest on Loans	Total \$	1,595,000
6. Contribution for the Ministry of Communications		66,000

The above-quoted estimated traffic expenditure totals \$3,486,000

The difference between receipts and expenditure shows a deficit of \$461,000

ESTIMATED EXTRAORDINARY CAPITAL RECEIPTS.

1. Contribution of Land-purchasing shares. Total \$ 1,390,000.

Remarks: Owing to financial stringency, the increase of rolling stock and the extension of construction work for the benefit of the line have either been set aside or postponed. It is now proposed to effect or to make a contribution of land-purchasing shares, the funds from which are to be used for the repayment of the money that the Government has paid for the purchase of land for the line.

The funds shall be assigned to this line for the increase of rolling stock and the extension of construction work. The funds total £150,000, which is equivalent to \$1,390,000.

The above-mentioned proposal has not yet been approved, and we include it in the estimates only provisionally.

ESTIMATED EXTRAORDINARY CAPITAL EXPENDITURE.

1. Increase of rolling stock	Total \$	978,800
(a) Locomotives		264,300
(b) Passenger Cars		161,000
(c) Goods wagons		553,500
2. Increase of Machinery supplies	Total \$	17,600
(a) For Locomotives		10,600
(b) For Construction		7,000
3. Extension of Construction work	Total \$	157,000
(a) Roadbed		25,000
(b) Stations and Workshop		132,000

The above-quoted extraordinary expenditure totals \$1,153,400.

The difference between Capital receipts and expenditure shows a profit of \$236,600.

CANTON-KOWLOON RAILWAY (KUANG-CHIU)

ESTIMATED TRAFFIC RECEIPTS

1. Coaching Receipts	Total \$	720,000
(a) Passengers		650,000
(b) Freight		70,000
2. Miscellaneous	Total \$	4,000
(a) Rental on land		2,000
(b) Interest		Nil
(c) Miscellaneous		2,000

The above-quoted Receipts total \$724,000

ESTIMATED TRAFFIC EXPENDITURE

1. General expenses	Total \$	209,416
(a) Salaries or wages		154,446
(b) Running expenses		12,608
(c) Miscellaneous		42,362
2. Traffic expenses	Total \$	101,746
(a) Salaries or wages		88,568
(b) Running expenses		9,848
(c) Miscellaneous		3,330
3. Workshop expenses	Total \$	237,603
(a) Salaries or wages		50,478
(b) Running expenses		134,520
(c) Reserve expenses		45,180
(d) Miscellaneous		7,425

4. Maintenance expenses	Total \$	132,516
(a) Salaries or wages		93,276
(b) Running expenses		3,040
(c) Reserve expenses		31,600
(d) Miscellaneous		4,600
5. Interest on Loans	Total \$	914,250
(a) British and Chinese Corporation		902,250
(b) Bonus		12,000
6. Contribution for the Ministry of Communications		33,600

The above-quoted expenditure totals \$1,629,131.

ESTIMATED EXTRAORDINARY TRAFFIC EXPENDITURE

1. Lawyer's fee	\$	2,500
2. Compensation fee	\$	1,000
	Total \$	3,500

The final total of traffic expenditure amounts to \$1,632,631

The difference between traffic receipts and expenditure shows a deficit of \$908,631

ESTIMATED EXTRAORDINARY CAPITAL RECEIPTS

1. Provisional Loan from the British and Chinese Corporation	\$	50,000
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Remark.—An agreement has been ratified for the said loan of £50,000. It is agreed that out of the loan £35,000 is to be used for purchasing rolling stock, and the remaining £15,000 is to be used for repaying the cost of cars which were purchased from the Peking-Mukden Line. Those cars are taken as the security for the loan. The loan bears interest at 7% annually, and its duration is fixed at two years.

The repayment may be made at one time, or in four instalments.

ESTIMATED EXTRAORDINARY CAPITAL EXPENDITURE

1. Increase of Rolling stock	Total \$	508,241
(a) Locomotives		125,000
(b) Passenger cars		72,000
(c) Goods wagons		138,000
(d) Cost of cars built by Peking-Mukden Railway		173,241
2. Increase of Machinery supplies	Total \$	8,000
(a) For stations		8,000
3. Extension of Construction work	Total \$	39,800
(a) Ta-sar-due station		25,000
(b) Other stations		14,800
4. Miscellaneous expenses for Extension business		6,000

The above-quoted extraordinary expenditure totals \$562,041

The difference between capital receipts and expenditure shows a deficit of \$62,041

Explanation.—1. The annual receipts estimated for this term show an increase of about \$80,000 in comparison with the estimate for the past term (July 1912 to June 1913). The coaching receipts have shown no progress, owing to several reasons: (1) deficiency of rolling stock and imperfect construction work, (2) unjust taxation by the taxation bureau, (3) lack of uniform currency.

The extraordinary capital expenditure estimated for the previous term (January to June 1913) was not utilised, so it is included in this term.

KIRIN-CHANGCHUN RAILWAY

ESTIMATED TRAFFIC RECEIPTS

1. Coaching receipts	Total \$	500,099
(a) Passengers		265,289
(b) Freight		234,810
2. Miscellaneous receipts	Total \$	6,240
(a) Rental		5,240
(b) Interest		Nil
(c) Miscellaneous		1,000

The above-quoted receipts total \$506,339

ESTIMATED TRAFFIC EXPENDITURE

1. General expenses	Total \$	158,040
(a) Salaries or wages		95,440
(b) Running expenses		38,000
(c) Miscellaneous		24,600
2. Traffic expenses	Total \$	140,943
(a) Salaries or wages		99,930
(b) Running expenses		14,373
(c) Miscellaneous		26,640

3. Workshop expenses	Total	\$ 257,800
(a) Salaries or wages		76,000
(b) Running expenses		141,800
(c) Reserve expenses		37,000
(d) Miscellaneous		3,000
4. Maintenance Expenses	Total	\$ 428,000
(a) Salaries or wages		200,000
(b) Running expenses		10,000
(c) Reserve expenses		213,000
(d) Miscellaneous		5,000
5. Interest on Loan		118,250

The above-quoted expenditure totals 1,103,033

The difference between traffic receipts and expenditure shows a deficit of \$596,694

ESTIMATED EXTRAORDINARY CAPITAL EXPENDITURE

1. Increase of Rolling stock	Total	\$ 465,400
(a) Locomotives		216,880
(b) Passengers cars		77,120
(c) Goods wagons		171,400
2. Increase of Machinery supplies	Total	\$ 32,000
(a) For workshop use		32,000
3. Extension of construction work	Total	\$ 693,300

The above-quoted extraordinary expenditure totals \$1,190,700

Explanation.—Since the opening of traffic on this line things have not been properly and completely arranged, and it is impossible to make out an exact estimate of the traffic receipts. We make it amount to \$500,000.

CHUCHOW-PINGHSIANG RAILWAY.

ESTIMATED TRAFFIC RECEIPTS.

1. Coaching Receipts	Total	\$ 575,780
(a) Passengers		77,100
(b) Freight		498,680
2. Miscellaneous	Total	\$ 3,450
(a) Rental		3,038
(b) Interest		Nil.
(c) Miscellaneous		412

The above-quoted receipts total \$579,230

ESTIMATED.

1. General expenses	Total	\$ 62,351
(a) Salaries or wages		48,459
(b) Running expenses		5,832
(c) Miscellaneous		8,060
2. Traffic expenses	Total	\$ 63,148
(a) Salaries or wages		53,884
(b) Running expenses		7,464
(c) Miscellaneous		1,800
3. Workshop expenses.	Total	\$ 136,810
(a) Salaries or wages		30,966
(b) Running expenses		49,464
(c) Reserve expenses		55,120
(d) Miscellaneous		1,260
4. Maintenance Expenses	Total	\$ 139,044
(a) Salaries or wages		11,584
(b) Running expenses		860
(c) Reserve expenses		125,700
(d) Miscellaneous		900

The above-quoted expenditure totals \$401,353

The difference between traffic receipts and expenditure shows a profit of \$177,877

ESTIMATED EXTRAORDINARY CAPITAL RECEIPTS.

1. Sale of waste	\$7,400
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ESTIMATED EXTRAORDINARY CAPITAL EXPENDITURE.

1. Increase of Rolling stock	Total	\$ 42,000
(a) Locomotives		Nil.
(b) Passenger cars		Nil.
(c) Goods wagons		42,000
2. Increase of Machinery supplies	Total	\$ 23,000
(a) Workshop		23,000
3. Extension of Construction work	Total	\$ 86,000
(a) Maintenance Department		86,000
4. Repayment of Loans	Total	\$ 73,000
(a) The Commissioner of Finance, Hunan		45,000

(b) Peking-Mukden Railway, building of cars	28,000
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The total extraordinary expenditure amounts to \$224,000

The difference between Capital receipts and expenditure shows a deficit of \$216,600.

Explanation.—The Coaching receipts for this term exceed by more than \$200,000, those estimated for the first year (1912) of the Republic.

The extension of construction work such as the building of two steel bridges at Sian-Tung and Tun-sin has not been fixed in the estimate for this term because of the deficit between the receipts and the expenditure.

The increase of 20 large flat wagons has been left out of this estimate and the increase of 20 large coal wagons has been halved in this estimate, that is only 10 wagons have been provided for.

PEKING-KALGAN LINE.

ESTIMATED TRAFFIC RECEIPTS.

1. Coaching	Total	\$1,763,100
(a) Passengers		394,200
(b) Freight		1,368,900
2. Miscellaneous		95,021
(a) Rental on land and Cars		92,870
(b) Interest		Nil.
(c) Miscellaneous		2,151

The above-quoted receipts total \$1,858,121.

ESTIMATED TRAFFIC EXPENDITURE.

1. General expenses	Total	\$ 142,760
(a) Salaries or wages		103,120
(b) Running expenses		10,000
(c) Miscellaneous		29,640
2. Traffic Expenses	Total	\$ 289,480
(a) Salaries or wages		134,560
(b) Running expenses		30,120
(c) Miscellaneous		124,800
3. Workshop expenses	Total	\$ 396,000
(a) Salaries or wages		87,600
(b) Running expenses		198,000
(c) Reserve expenses		109,200
(d) Miscellaneous		1,200
4. Maintenance expenses	Total	\$ 260,600
(a) Salaries or wages		24,000
(b) Running expenses		2,400
(c) Reserve expenses		231,800
(d) Miscellaneous		2,400

The above-estimated expenditure totals \$1,088,840.

ESTIMATED EXTRAORDINARY TRAFFIC EXPENDITURE.

1. Preparation for	Total	\$ 62,000
(a) Accidental construction work		50,000
(b) Extraordinary expenses		12,000

The above estimate totals \$62,000. The final total of the traffic expenditure amounts to \$1,150,840.

The difference between traffic receipts and expenditure shows a profit of \$707,281.

ESTIMATED EXTRAORDINARY CAPITAL EXPENDITURE.

1. Increase of Rolling stock	Total	\$ 540,000
(a) Locomotives		Nil.
(b) Passenger Cars		Nil.
(c) Goods wagons		540,000
2. Increase of Machinery supplies	Total	\$ 13,500
(a) Workshop, Nankow		2,000
(b)		2,000
(c) See-Ju-Mon, Kong-Chwang, and Sha-Hwa-yuen		7,500
(d) Angle rails for Kong-Chwang and Jiu-Yong-Kwan		2,000
3. Extension of construction work	Total	\$ 108,568
(a) Work for Joo-Muh and Sing Chwang Tse		12,000
(b) See-Ju-Mon to Chang-Cha-Kow work for stations		11,098
(c) Work for Chang-Cha-Kow station		270
(d) Work for Nankow		72,310
(e) Work for See-Ju-Mon		12,890

The estimated Capital expenditure totals \$662,068.

Explanation.—The estimated receipts for last year averaged \$150,000 monthly, but the actual receipts slightly exceeded the estimate.

The estimate of the traffic and the extraordinary traffic expenditure for the previous term was fixed at an average of \$100,000 monthly. The estimate for this term is made on the basis of the actual expenditure for the first year (1912) of the Republic.

KALGAN-SUIYUAN RAILWAY.

ESTIMATED TRAFFIC RECEIPTS

1. Traffic receipts	Total	\$ 378,000
(a) Passengers		86,400
(b) Freight		291,600
2. Miscellaneous Receipts	Total	10,411
(a) Rental		8,500
(b) Interest		Nil.
(c) Miscellaneous		1,911
The above estimated receipts total		388,411

ESTIMATED TRAFFIC EXPENDITURE

1. General expenses		49,580
(a) Salaries or wages		37,380
(b) Running expenses		3,660
(c) Miscellaneous		8,540
2. Traffic expenses	Total	84,600
(a) Salaries or wages		38,400
(b) Running expenses		6,000
(c) Miscellaneous		40,200
3. Workshop expenses.	Total	\$ 94,800
(a) Salaries or wages		22,800
(b) Running expenses		42,000
(c) Reserve expenses		30,000
(d) Miscellaneous		Nil.
4. Maintenance expenses.	Total	\$ 120,777
(a) Salaries or wages		46,500
(b) Running expenses		2,730
(c) Reserve expenses		69,237
(d) Miscellaneous		2,310

The above estimate of expenditure totals \$ 349,757

ESTIMATED EXTRAORDINARY TRAFFIC EXPENDITURE

1. Funds for accidental construction or repairing work	\$ 50,000
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The final total of the above estimated traffic expenditure amounts to \$399,757. The difference between traffic receipts and expenditure shows a deficit of \$11,346.

ESTIMATED EXTRAORDINARY CAPITAL EXPENDITURE

1. Increase of Rolling Stock	Total	\$ 550,000
(a) Locomotives		280,000
(b) Passenger Cars		Nil.
(c) Goods wagons		270,000
2. Extension of construction work	Total	\$ 9,864
(a) Work for Kalgan to Yung-cha-Pao		1,852
(b) Work for Yung-cha-Pao to Yang-Kao		8,012

CHEFOO BREAKWATER

The arrival of two engineers from Holland to plan a breakwater for Chefoo Harbor brings that work a step on the way. The Commission, which consists of representatives of the Consular Body, Commissioner of Customs, Chinese Superintendent of Customs and Chinese and foreign Chambers of Commerce, have arranged for the levying of a surtax on shipping for the purposes of the work, and this fund will be collected by the Customs and placed at the disposal of the Commission for administration. The engineers will prepare plans for the breakwater, and will submit them to Peking for the consideration of the Central Government and the Diplomatic Corps. The Commission is in a sense similar to the Huangpoo Conservancy and the Hai-ho Conservancy.

It is interesting to note that an effort is being made to induce the Chinese to take steps to make the Newchwang harbor satisfactory. Great attention is needed to even keep the little trade that remains. Otherwise it will drift to Dalny as the trade of Chefoo has drifted to Tsingtao.

WIRELESS BETWEEN JAPAN AND HAWAII

A Tokyo paper reports that the Japanese Department of Communications with a view to establishing a wireless service between Japan and Hawaii, made a trial in December 1909 between the Choshi Wireless Station and that at Calk (?) in the Hawaiian islands, a distance of 3,300 nautical miles. The power used was only 20 kilowatts, yet the message was most distinctly received by the *Korea*, which happened to be 3,150 nautical miles from Choshi.

The result greatly encouraged the Japanese authorities, who subsequently decided to erect a big wireless station at Choshi. The Cabinet has now consented to an outlay of 400,000 yen for the undertaking in the next fiscal year.

3. New construction work Total \$ 2,142,857

(a) Work from Yang-Kao to Tar-Tung 2,142,857

The above estimated extraordinary expenditure totals \$2,702,721.

Explanation.—The estimate of permanent receipts for the previous term was made at an average of \$30,000 monthly, but the actual receipts were slightly in excess of the estimate.

Extra-Increase on the Budget Already Made

PEKING-HANKOW RAILWAY

ESTIMATED TRAFFIC RECEIPTS

Freight receipts \$49,547.83.

Remarks.—The Taxation Station at Fong-Tai has been abolished.

The Peking-Kalgan, Peking-Mukden and this line have agreed to pay annually the tax usually collected by the station. The abolition of the station will mean an increase on Merchandise receipts.

TRAFFIC EXPENDITURE

General expenses \$49,547.83.

Remarks.—The total amount that the three mentioned railways have been ordered to pay for the Taxation Station is Tls. 100,000. This line agrees to pay Tls. 33,000, which is equivalent to \$49,547.83.

The Peking-Kalgan Railway agrees to pay Tls. 34,000, or \$51,049.27.

The Peking-Mukden Railway agrees to pay Tls. 33,000, or \$49,547.83.

KIRIN-CHANGCHUN RAILWAY

EXTRAORDINARY TRAFFIC EXPENDITURE

1. Engineering work for the repair of the line injured by the flood during May, June, and the first part of July. Total \$128,920.

TIENTSIN-PUKOW RAILWAY

TRAFFIC EXPENDITURE

1. General expenses.	Total	\$ 38,382
(a) Salaries or wages		32,160
(b) Running expenses		960
(c) Miscellaneous		5,262

Remarks.—The T.-P. R. is the most important line between the North and South. The districts through which it runs, are considered to be the homes of outlaws. At times when war breaks out in the country it serves as a line especially for military affairs. Already trained railway police and railway soldiers are not sufficient in number for the protection of the line. When a policeman, or a soldier vacates his duty it is impossible to fill up the vacancy with an untrained hand. Therefore we see the necessity of enlisting more men and establishing a school in which they are to be trained. We consider such action very important especially for the time being when things are not conducive to tranquillity.

This extra estimate is made wholly for this purpose amounting to \$38,382.

MR. CHANG WU

Mr. Chang Wu, whose portrait we give in this issue, is a native of Chekiang. Before taking his present post in association with Sir Richard Dane, he had become recognised as one of the foremost authorities on matters connected with the Salt Gabelle. During the Manchu *régime* he was engaged in the management of financial and salt affairs in the province of Fukien. The Republican Government appointed him to take charge of all matters pertaining to salt in the Three Eastern Provinces. He introduced many reforms, notably the system of direct taxation in the salt-producing districts of the province of Fengtien. The improvements in management which he made proved very efficacious and the revenue from salt taxation showed a remarkable increase.

Mr. Chang took up the post of Chang Lu Salt Commissioner in the first year of the Republic and that of Liang Hwai Salt Commissioner in the second year.

GOLD DREDGING IN ALASKA

A Washington telegram reports:—Thirty-eight gold dredges were operated in Alaska in 1912, compared with twenty-seven in 1911, according to a report of the United States Geological Survey. These dredges handled about 3,000,000 cubic yards of material, recovering gold worth \$2,200,000. Since 1880 the placers of Alaska have yielded gold valued at \$154,800,875. The mines have also produced \$960,743 worth of silver. The placers produced in 1912 gold worth \$11,000,000. (It is to be noted that the above production averages over 61 cents gold per yard. Much of the ground handled had a much higher value. Dredging costs in Alaska vary from 20 to 50 cents gold per yard according to local conditions and methods of working.)

OPENING OF THE PANAMA CANAL

VIEWS OF A SHIPPING EXPERT

One of the most important questions that will affect the use of the Panama Canal by West Coast lumbermen is involved in the shipping problem. The shipping laws of the United States prohibit any other than American built and owned vessels from engaging in the coastwise trade, and trade between the two coasts of the United States is declared to be of coastwise character. But American shipping, because of the peculiar laws of the country, costs more to build and to operate than vessels carrying the flags of other important commercial nations. The bearing that these facts will have upon the volume of lumber business via Panama is giving Pacific coast lumbermen much concern as they face the opening of the Canal and begin to consider how they shall take best advantage of that route. They have to consider competition they will meet from British Columbia mills, whose products can be shipped to the Atlantic coast under any flag, as well as actual costs.

Perhaps the best authority on this matter is Robert Dollar, of San Francisco, a lumberman and a shipper. For twenty-five years he has been engaged in business on the Pacific coast, during which time he has acquired a considerable fleet, most of it engaged by the foreign trade, and therefore of a character that can use the Canal route. A studied opinion from him is of value, and the *American Lumberman* asked Mr. Dollar to give its readers an analysis of the shipping phase of the problem, which he has cordially complied with, as follows:

"We need only consider the movement as being from west to east. No doubt some yellow pine and hardwood will move from east to west, but the volume will be comparatively small. A great deal of uncertainty exists on this question. As it is one largely of shipping I will endeavor to show the situation from that viewpoint.

"Commodities can be carried profitably in small steamers a short distance only. The greater the distance the larger the vessel required. For example, a vessel carrying 500,000 feet of lumber could not profitably be run a greater distance than 750 miles. I have experimented with different sized vessels between Puget Sound and China, the distance being about the same as to New York via the Canal, and found that three millions would be a minimum, and any cargo up to five millions is much more profitable.

"Among the American vessels engaged in the lumber trade on this Pacific coast there is not one large enough. The new steamer *John A. Hooper* is the largest, and it carries only 2,250,000 feet, and among the ordinary cargo boats, outside of the regular lines, I do not know of a single available vessel, so that lumber carrying will have to be done by the regular liners. The American-Hawaiian, Grace & Co., and Luckenbach Steamship Company all have vessels that will carry lumber, although they are all better adapted for general merchandise than for lumber, and in regular liners sailing promptly on time lumber cargoes are not as desirable on account of slower loading and discharging; but to develop the lumber trade to the best advantage steamers especially built for the lumber trade would be the most successful and would develop the trade better. At the present time there is no talk of any such vessels being built. That is the vessel situation from and between American ports.

"We now have to consider the situation from a British Columbia point of view; that is, carrying lumber from there to New York. Any foreign steamer may engage in this trade, so it is free to the competition of the world, any number of suitable steamers being at all times available.

"The price of lumber in British Columbia has been higher than on the American side, but at present the price is about the same on each side of the line, so it comes down to the cost of transportation. The following is a comparison of two ships of the same size:

	British from British Columbia	American from Puget Sound.
Dead Weight.		
First cost of an 8,000-ton D. W. steamer that would carry 4,000,000 (I doubt if the American vessel could be bought for this price-today)	\$250,000	\$500,000
Cost of carrying a cargo of lumber from British Columbia or Puget Sound to New York, the total time loading, discharging and steaming, estimated duration 60 days; distance 6,000 miles; interest on investment, 6%; insurance, 6%, and depreciation, 5%, a total of 15%	7,083	14,166
White crew wages and stores of all kinds.....	8,640	10,040
1,050 tons coal at \$5..	5,250	5,250
Canal tolls (American measurement)	4,800	.....
Tonnage dues, pilotage, etc.	600	520
Stevedoring 4,000,000 feet in and out.....	6,200	7,200
10% profit on investment for 60 days	4,166	8,333
Total cost of carrying 4,000,000 feet	\$ 36,739	\$ 45,509
Average cost per M feet	\$9.18	\$11.38

"Our Government has not told us on what measurement tolls will be paid. I have put in American measurement. I assume Congress will take off the duty; if not, that must be added to the British cost.

"If oil were used for fuel that would reduce the cost 50 cents a thousand, but in the above calculation no provision has been made to take the vessel back to the Pacific coast. I assume, however, it could get enough to pay its own way, and if an Asiatic crew were employed on the British ship the price would be further reduced.

"You will see that the first cost of an American steamer is the first serious handicap, and with the higher cost of American wages it runs up the cost so that competition is impossible. Needless to say, British Columbia will supply all the lumber it can cut for our eastern market.

"An agitation is going on to make the Americans pay the Canal dues, but you will agree that the American ship is loaded with expense to the sinking point. Is it any wonder that no ship came under our flag after the rider on the Panama Canal Bill permitted foreign ships to be registered as American bottoms? The reason for this is explained fully in the article



MR. ROBERT DOLLAR, of San Francisco, head of the Robert Dollar Company.

I wrote recently on the "American Merchant Marine;" and is it any wonder that one time we had the largest number and the best ships afloat and now we are down to less than 500,000 tons in the foreign trade?

"We on the seaboard ask you people of the Middle West to wake up your Congressmen and compel them to give us merchant marine to engage in the foreign trade to carry your products, and without costing our country one cent

Robert Dollar is of Scotch descent and Scotch birth. He was born in Falkirk sixty-nine years ago. His birth and his career almost from his infancy foreshadowed his future. By inheritance as well as inclination and training he is, as has aptly been said of him, "a lumberman from the ground up." His father was manager of the lumber firm Robert Melville & Co., in the son's native town, and the latter's birth occurred in apartments above the office of that concern. Robert's theoretical schooling ended in his twelfth year, when he entered upon a year's work as office boy in a shipping office. A year later he migrated with his parents to Ottawa, Ontario, and in the following year he began his first experience in lumbering, as assistant to the cook in one of Hamilton Bros.' camps on the Gatineau River, 200 miles from civilization—a rare and enlightening experience for a "green" Scotch boy. At the age of 21 Robert Dollar had become foreman of a lumber camp operated by Hamilton Bros.

Six years later Mr. Dollar began business on his own account. He bought a small tract of timber in the Muskoka district and started lumbering, but his new venture met with disaster, for the historical panic of "Black Friday" swept it and that of thousands of others out of commercial existence. Undaunted, he sought and secured employment and became manager of the big lumber interests of H. H. Cook. With characteristic Scotch thrift and courage he handled the new position so well that at the end of four years he had discharged his debts in full. He then resumed business as a principal, this time as a partner of Mr. Cook, and engaged in getting out hewn timber for the English market. Finding larger timber obtainable in Michigan, he moved over to the American side in 1880, start-

ing first at Grand Marias. Later he built the Dollarville mill, at the thriving town named in his honor, but sold this plant later to Danaher & Melendy, who operated it successfully for many years.

In 1888 Mr. Dollar transferred his interests and his activities to the Pacific coast and engaged in lumbering redwood in Sonoma and Mendocino counties. To move this product he bought or built steamers, starting modestly, but later acquiring a fleet now grown beyond all his earlier expectation. At present he has ownership control of eight British steamers of a capacity of over 30,000,000 feet engaged in transporting lumber to China, Japan and the Philippines, besides several steamers in the coastwise business, trading as far north as Alaska and south to Panama.

Mr. Dollar's experiences have included perforce a wide knowledge of men and of measures of national import; without theoretical training in that direction, he is a practical diplomat. When the San Francisco school question became acute his was the able influence that gathered a party of influential citizens from Coast chambers of commerce and sent them on a diplomatic mission to Japan. They were well received by the higher officials of that country, including its emperor, and a result was the abrupt cessation of war talk. Noting the benefits of such diplomacy, two years later Mr. Dollar formed a similar party to go to China. There they had what is said to have been the greatest reception ever recorded purely commercial representatives in any foreign country, the Chinese emperor and all the country's highest officials extending to the visitors the highest honors. The outcome included the forming of permanent friendship and establishing of good will between the two nations.

Mr. Dollar is a persistently hard worker. Besides constant personal attention to his direct interests he has served as president of the Merchants' Exchange and the Chamber of Commerce of San Francisco. More than half of his time is said to be given to philanthropic work. In recognition of this, on his recent visit to his native home in Scotland its authorities conferred upon Mr. Dollar the unusual honor of "freedom of the burgh."

MURORAN STEEL WORKS

To place the works on a more workable basis the authorities of the Japan steel works and the representative of the British shareholders have been holding repeated conferences. Recently the directors of the Hokkaido Tanko Kisen Kaisha, one of the leading shareholders of the works, met in conference on the premises of the Mitsui firm to receive a report on the result of the repeated conferences with the foreign shareholders, from Dr. Dan who represented the company at the conferences. After careful deliberation it was decided that the interests of the company would henceforth be represented by the Mitsui Firm.

Later the representatives of the British shareholders visited Dr. Dan at the Mitsui Firm and held a conference behind closed doors about the reorganization of the works and the appointment of the successor of Admiral Baron Yamanouchi, the President, who has resigned his post on account of a divergence of opinion with the foreign capitalists in regard to the management of the works. As a result of the conference a definite agreement is said to have been arrived at between the Japanese and foreign capitalists whereby reforms shall be carried out in the working of the foundry, and the court of directors shall be reorganized, though the particulars of the agreement are still kept secret.

The board of directors of the Japan steel works sat in council the following day to receive letters of resignation from the retiring officials. After formal discussion the resignations were formally accepted. An extraordinary meeting of shareholders will, it was also decided, be convened for the election of officials when an agreement has been arranged among the larger shareholders as to the selection of the candidates.

According to the *Tokyo Asahi* the board of directors will be completely reorganized, new men to be elected for the vacant posts. Contrary to general expectation Dr. Dan will not be nominated for the presidency. Mr. Noble and Mr. Vickers, representatives of the British shareholders, at the last conference, expressed their desire to recommend one of the foreign officials for the post. An objection has been raised, however, to the proposal by the Japanese shareholders. If Mr. Noble and Mr. Vickers insist on this point there is every reason to believe Japanese candidates will decline to stand for the posts. It is anticipated Count Hirosawa, Admiral Midzutani, and Mr. Imahara will be recommended for directorship.

WIRELESS STATION AT CANTON

The Canton authorities are reported to contemplate the erection of a new wireless station in the city. There has been a small station, in connection with the local Admiralty, for some time, but apparently this is too feeble to meet present conditions. The new site is said to comprise an area of 1,000 square yards, and this space is needed for the apparatus and rooms for the accommodation of the employees. The site chosen is near the Assembly Hall, and this is regarded as a point in its favour. Moreover, it is near the parade ground, and all round the site are the military and naval establishments of the city, so that it will be very convenient for sending and receiving messages, and also will be easy of protection in case there is further trouble or civil war. The report does not state what it will cost, or who will be responsible for the construction of the plant.

The Pacific Commercial Company, Manila, P.I., report considerable activity in the agricultural machinery field for the month of November. Sixteen steam tractors and trashers of the Gaar Scott line of the Rumbley Products Co., arrived and were delivered to the buyers. Each of the trashing sets have a capacity of from 800 to 1,000 cavans (cavan—125 lbs.) of hay per day.

An official return gives the successful artesian bores of Queensland at 866 in number, and the following gives their water supplies:—

Under 10,000 gallons per day	63
10,001 to 150,000 gallons per day	186
150,001 to 750,000 gallons per day	361
750,001 to 1,500,000 gallons per day	171
1,500,001 to 2,500,000 gallons per day	60
2,500,001 gallons per day and over	25

Total flowing bores 866

The Australian and New Zealand gold output for the first ten months of 1913 is reported as approximately 2,117,668 fine ounces, of a value of about £9,000,000; these figures showing a decrease of about 70,218 fine ounces, or a difference of about £298,500 in value, as compared with the corresponding period last year. A comparison of the figures for the ten months is as follow:—

	1911. Oz.	1912. Oz.	1913. Oz.
Victoria	432,152	395,269	364,718
New South Wales.. ..	152,639	137,366	123,346
Queensland	314,721	290,681	220,053
West Australia	1,136,098	1,059,501	1,084,011
*South Australia	9,500	6,500	7,000
*Tasmania	27,000	22,000	30,000
Commonwealth	2,072,110	1,911,317	1,829,128
New Zealand	363,501	276,569	288,540
Total	2,435,611	2,187,886	2,117,668

*Approximate.

MONO-TRAMWAY FOR TOKYO

Recently a committee meeting of the Tokyo Municipal Assembly was held when among other things, a proposal for the construction of an elevated mono-tramway was taken up for consideration. Some months ago Mr. Okuyama, an electric expert who spent long years abroad to specialize, and some eight others, applied to the Tokyo City Office for permission to build a suspended mono-tramway connecting Ueno Park with Asakusa Park, a distance of 1 mile 7 chains. The project was subsequently submitted to the Municipal Assembly for deliberation, which appointed a committee for further investigations. In the committee meeting Baron Sakatami, the Mayor, called attention to the paramount importance attaching, as he considered, to the permission or non-permission of the project. After prolonged discussion, it has been decided not to permit the project from the standpoint of unifying in future the Tokyo city tramway system.

RAILWAYS IN CHOSSEN (KOREA)

RECORD OF A YEAR'S PROGRESS

From the excellent annual report on reforms and progress in Chosen (Korea) for 1911-12 we take the following information relating to railways:—

The total length of the railway lines open to traffic, passenger or freight, was 767.6 miles at the end of the fiscal year 1910, showing an increase of 93 miles, as compared with the preceding fiscal year. This increase was principally due to the opening of portions of the Keijo-Gensan and Taiden-Kunsan lines, a branch line running from Pyong-yang to the Government Coal Mine, and the railway bridge over the Oryoku (Yalu) River. On examining operating results, the total train mileage is found to have been 2,307,667 miles, and the total traffic receipts, 5,629,856 yen, showing an increase, respectively, of 205,545 miles, and of 611,525 yen. Transportation traffic conducted during the fiscal year 1911, as compared with the preceding fiscal year, can be seen in the appended table:—

Description	1911-12		1910-11		Increase	
	Miles	Yen	Miles	Yen	Miles	Yen
Length of lines open to Traffic	767.6	5,629,856	674.6	5,018,331	93.0	611,525
Total Train Mileage	2,307,667.0	5,758,118	2,102,122.0	5,142,446	205,545.0	615,672
Total Number of Passengers	2,429,687	5,124,168	2,024,490	4,804,066	405,197	320,102
Total amount of Luggage	10,326,418	633,950	9,057,591	338,380	1,268,827	295,570
Total Amount of Freight	1,063,111	128,262	888,723	124,115	174,388	4,147
Total Receipts from Passengers	3,008,391	5,758,118	2,613,452	5,142,446	394,939	615,672
Total Receipts from Freight	2,621,465	5,124,168	2,404,879	4,804,066	216,586	320,102
Total Receipts	5,629,856	633,950	5,018,331	338,380	611,525	295,570
Average Receipts from Passengers...	10.48	...	9.88	...	0.60	...
Average Receipts from Freight	9.53	...	9.23	...	0.30	...
Total Average Receipts	19.90	...	19.06	...	0.84	...

In spite of the fact that traffic was often interrupted by floods in the summer time, passengers and freight, and receipts from both, as shown in the above table, increased owing to the general economic growth in the Peninsula.

As to the improvement of traffic, with the completion of the improvement work on the Keijo-Shingishu (Seoul-Shinwiju) line, the train service on this line, hitherto taking 14 hours, 15 minutes, was shortened to 12 hours, 20 minutes in April, 1911. When the railway bridge across the Oryoku (Yalu) River was completed on November 1, 1911, the trunk line running between Fusan and Shin-Gishu was connected with the Antung-Mukden line of Manchuria,

and a tri-weekly express service, equipped with sleeping, dining and first class cars known as "the Chosen-Manchuria Express," was inaugurated. This service connects with the trans-Siberia Express by way of the Changchun-Harbin section of the Chinese Eastern Railway, and with the express train of the Imperial Railway in Japan proper by the Fusan-Shimonoseki ferry steamers. This express service taking only first class passengers makes an extra charge, called express extra ticket, in addition to the ordinary fare. The night train running on the Keijo-Fusan line every other evening was made a nightly service after December, 1911. In order to advance the convenience of passengers and shippers, the so-called joint services with the Imperial railways in Japan proper and the Manchuria railways were maintained by the railways of the Peninsula, and these services are increasing year by year. A similar service was also opened with the Nippon Yusen Kaisha and Osaka Shosen Kaisha which have steamship lines plying between Japan proper, Chosen and China.

The general account of the railway traffic for the fiscal year 1911, compared with that of the preceding fiscal year, shows much better results, as may be seen from the following table:—

Items	1911-12		1910-11		Increase	
	Yen	Percentage	Yen	Percentage	Amount	Percentage
Receipts from Traffic...	5,629,856	12.2	5,018,331	12.2	611,525	12.2
Receipts from Miscellaneous Sources	128,262	03.3	124,115	03.3	4,147	03.3
Total Receipts	5,758,118	12.0	5,142,446	12.0	615,672	12.0
Expenses	5,124,168	06.7	4,804,066	06.7	320,102	06.7
Profits	633,950	05.3	338,380	05.3	295,570	05.3

The total receipts from the railways for the fiscal year 1911 reached 5,758,118 yen, being an increase of 615,672 yen, or 12 per cent., as compared with the figures for the preceding fiscal year, while the total expense of operating the railways, including the expenses of the Railway Bureau, amounted to 5,124,168 yen, being an increase of 320,102 yen or 6.7 per cent. Thus the net profits of the railways amounted to

633,950 yen for the fiscal year 1911 against 338,380 yen for the preceding fiscal year (1910.) Under such circumstances the railways in the Peninsula are now gaining financial stability. As to the capital account of the railways, the increase for 1911 was about 9,240,889 yen. Adding this amount to the capital transferred from preceding years, the total capital reached 105,076,962 yen, of which 700,000 yen belongs to the account of the purchase of materials.

Railway Construction

The general plan of the construction of two railways—the Keijo-Gensan line, measuring 138 miles, and the Taiden-Mokpo line with a branch to Kunsan, measuring 175.8 miles—and the estimates of their cost were stated in the previous Annual Report. In the construction of the Keijo-Gensan line, the survey of which was commenced in April, 1910, 19.8 miles running between Ryuzan (suburb of Keijo) and Giseifu were completed up to August, 1911, and traffic along this distance was commenced at the same time. The civil engineering work on the section between Giseifu and Heiko, measuring 55.2 miles, was partly completed during the fiscal year 1911. On the other hand, in the construction commenced from the Gensan side, the distance between Gensan and Kosan measuring 288 miles, was surveyed during the same year, and construction of the first 13.6 miles starting from Gensan was begun. The construction of this line is expected to be completed by November, 1914. In the construction of the Taiden-Mokpo line of 161 miles with 14.8 miles branching out to Kunsan, the survey was commenced in May, 1910, and the civil engineering work in October. Up to the end of the fiscal year, 69 miles—38 miles of the Taiden-Kokei section, 17 miles of the Kokei-Riri section and 14.8 miles of the Kunsan branch—were constructed and opened to traffic. The construction of the line is not expected to be completed until April, 1914.

The building of a steel bridge over the Oryoku (Yalu) River connecting the Antung-Mukden line of Manchuria was commenced in August, 1909, and completed as estimated in October, 1911, in spite of the fact that the work was often interrupted by floods. The total length of this bridge is 3,098 feet, consisting of 12 spans of about 200 or 300 feet each. A span of 310 feet in the middle of the bridge is capable of being opened to permit the passage of ships. For the construction of this bridge an estimate of 2,000,000 yen was made, but the actual cost did not exceed 1,750,000 yen.

As to improvement of railway tracks, work on the Keijo-Shingishu line was completed in October, 1911, simultaneously with the completion of the building of the bridge over the Oryoku River. The improvement work on the Keijo-Chinnampo line, such as adjustment of sharp curves and grades, or replacing temporary bridges with permanent ones, etc., was more than half completed by the end of the fiscal year, 1911. Another improvement on the Fusan-Keijo line, viz., making a short cut between Iin and Yokusen and replacing a steel bridge on the Kan (Han) River, was commenced in the fiscal year 1911, and more than half was completed during the same fiscal year, while the remainder was expected to be completed in the fiscal year following.

For the account of railway construction and improvement works, 8,500,000 yen was apportioned for the fiscal year 1911. The surplus of the account for the previous fiscal year amounting to 189,086 yen being added to that amount, the total provided for the fiscal year 1911 was 8,689,086 yen, of which 8,625,257 yen was actually expended during the same fiscal year, leaving a balance of 63,829 yen. The following table shows the accounts for railway construction and improvement, apportioned according to fiscal years:—



A Street in Keijyo (Seoul)



Express Train leaving the Fusan Pier

Expenses defrayed during 1906-7—1911-12

Description	Estimate Yen	Net Expenses Yen	Balance Yen
Construction Expenses:—			
General Expenses	793,275	711,396	81,879
Keijo-Fusan Line	2,398,687	2,279,754	118,933
Keijo-Shingishu Line	20,723,614	22,028,574	— 1,304,960
Masan Line	357,275	659,146	— 301,87 ¹
Heijo-Chinnampo Line	1,886,040	1,003,961	882,07 ⁹
Taiden-Mokpo Line	1,892,500	2,547,333	— 654,833
Keijo-Gensan Line	2,607,000	3,195,952	— 588,952
Engines, Passenger and Freight Cars...	4,746,397	2,927,298	1,819,09 ⁹
Railway Hotel ... ..	.....	.....	.....
Total	35,404,788	35,353,414	51,374
Improvement Expenses... ..	605,230	592,630	12,600
Grand Total	36,010,018	35,946,044	63,974

Estimates apportioned after 1912-13

Description	1911-12 Yen	1912-13 Yen	1913-14 Yen	1914-15 Yen	Total Yen
Construction Expenses:—					
General Expenses	138,423	141,995	141,996	138,424	560,838
Keijo-Fusan Line	322,415	.....	.....	.....	322,415
Keijo-Shingishu Line	2,025,486	.....	.....	.....	2,025,486
Masan Line... ..	.....	.....	.....	.....	.....
Heijo-Chinnampo Line ... ..	.....	.....	.....	.....	.....
Taiden-Mokpo Line... ..	1,733,336	2,892,053	3,241,963	2,922,462	10,789,814
Keijo-Gensan Line	2,985,891	4,073,095	3,114,371	1,283,414	11,456,771
Engines, Passenger and Freight Cars	720,800	890,000	1,022,400	866,446	3,499,646
Railway Hotel	146,429	502,857	479,270	156,428	1,284,984
Total	8,082,780	8,500,000	8,000,000	5,367,174	29,949,954
Improvement Expenses	917,220	.....	.....	.....	917,220
Grand Total	9,000,000	8,500,000	8,000,000	5,367,174	30,867,174

Tramways and Light Railways

As alluded to in the last Annual Report, tramways and light railways maintained by private corporations in the Peninsula were brought under the uniform control of the Railway Bureau of the Government-General after the Annexation. During the fiscal year 1911, six applications for construction of tramways and light railways were submitted to the Railway Bureau for permission, of which the following three were sanctioned:—

1. The Nikkan Gas and Electric Company, which maintains a tramway in the city of Keijo, applied for permission to extend the tramway 1.4 miles.

2. The Chosen Electric Company applied for permission to construct an electric tramway running 12.1 miles between the post of Seishin (Chong-ching) and Ranan (Nanam).

3. A private individual applied for permission to construct a tramway (human power) running 0.7 miles between Waikan station and the Rakto (Nak-tong) River in South Keisho Province

PROGRESS IN HOKKAIDO

An interesting account is given in the *Chugai Shogyo* (translation by *Japan Daily Mail*), by a Seiyukai member of the Diet of the recent development of agriculture and industry in the Hokkaido. The industrial activities in the island comprise mining, agriculture, fisheries, cattle farming, and forestry. According to the latest reports available the profits these industries bring yearly to the people of the Hokkaido amount something like 114,760,000 yen. The yearly income of the farmers at present amounts to 50,000,000 yen. Their activities are chiefly directed to the production of raw materials for alcohol distillers, hemp weavers, beer brewers, oil extractors, and millers. They also supply tinned peas and condensed milk. The brewing industry in the Hokkaido is now acquiring considerable importance.

Miners in the Hokkaido earn something like 8,290,000 yen a year. The annual output of coal amounts to 2,500,000,000 tons in round figures. The veins are inexhaustible and can be worked almost to the end. Of late petroleum has been discovered in the island. Though the International Oil Company has withdrawn from the field on the failure of their trial boring the Nippon Oil and Hoden Oil Companies, and Mr. Marai still remain. According to latest reports to hand their persistent efforts are about to be crowned with success.

In the early days of Meiji sheep rearing was tried, but it ended in failure. Since then careful study has been made of the question, and now sheep breeding is extensively carried on in the Hokkaido. It is hoped that the import of wool, which amounts to 50,000,000 yen yearly, will be checked altogether at no distant date.

The Hokkaido is regarded as one of the three greatest fishing stations in the world. The yearly catch in its waters is valued at 26,000,000 yen. The herring catch this year reached a record. The market for the fish is chiefly in China.

Forestry yearly brings in a profit to the amount of 10,040,000 yen. The export of timber is valued at some 5,000,000 yen. Paper manufacture in the Hokkaido has made remarkable development of late years. In 1898 the mills in the island turned out only 100,000 yen worth. Four years later the output increased to 3,300,000 yen. This year it is expected they will turn out some 5,000,000 yen worth by the end of the year.

The prospects of the hemp weaving industry in the island are also very promising. Several years ago the area under hemp stood at only 4,000 chobo. This year the figures have risen to 9,400 chobo. The greater part of the output is exported. Peppermint growing in Kitami province has also a promising future. The yearly export is said to amount to 1,200,000 yen.

RAILWAYS OF THE WORLD

PROGRESS AND DEVELOPMENT IN TWO DECADES

The "German Empire Statistical Year Book" for the year 1913 contains an interesting survey of the development of railways throughout the principal countries of the world from the year 1890 to 1911, that is to say during a space of two decades.

In the year 1890, Germany could boast of by far the greatest extent of railway lines, although there were other countries in which the railway net was denser. The entire length of railway lines in Germany amounted to very nearly 43 thousand kilometers. Second in order came France with 37 thousand kilometers of railway lines, about 6,000 kilometers less than Germany. These two countries were followed by Great Britain with 32 thousand, Russia with 31 thousand, Austria-Hungary with 27 thousand and, a long way behind, by Italy with 13 thousand kilometers of railway lines. Among the smaller countries of Europe, the only ones with any length of railway line were Spain with about 10 thousand, Sweden with 8 thousand, and Belgium with 5 thousand kilometers. The latter land, with its 5 thousand kilometers, possesses the densest railway net of any country in Europe, as it has nearly 18 kilometers of railway line per hundred square kilometers of land surface. No other country in Europe comes anyway near these figures.

At the end of 1911, Germany still headed the list of European States with 62 thousand kilometers of railway line. Then followed Russia, which only took fourth place in 1890, with 61 thousand kilometers, and immediately behind came France with 50 thousand kilometers, having thus passed from the second to the third place in the list, Austria-Hungary came fourth with 45 thousand, and Great Britain, which took the third place in 1890, with 32 thousand kilometers, has now sunk to the fifth place with 38 thousand kilometers. At the tail of the list of European countries comes Italy, in which land the length of railway line has only increased to the extent of some 4 thousand kilometers in the course of the 21 years lying between 1890 and 1911. Little Belgium has once more added greatly to its existing railway lines, and could in 1911 boast of some 8,700 kilometers, so that she now has 20 kilometers of railway line to the hundred square kilometers of land surface, thus continuing to own the densest railway net in the world.

It is evident that a dense railway net forms a very important factor in the scheme of military mobilisation, for the greater the number of existing railway lines, the more rapidly and easily can troops be brought to the frontier. This is not a very important matter for Belgium, which is a neutral country, but for the Great Powers of the Continent, everything that tends to enable masses of troops to be concentrated at short notice is of the greatest importance for the safety of the country. But this really only holds good for the Continent, for Great Britain, being an island, need not attach so much importance to this particular point in its scheme of defence as must Germany, Austria-Hungary, Italy, France and Russia. Of the five Continental Great Powers, Germany now possesses the densest net of railway lines, having 11.4 kilometers of line to the 100 square kilometers; then comes France with 9.3, Austria-Hungary with 6.6, Italy with 6.0, and Russia comes last with 1.1. We see, therefore, that Russia, despite the fact that she has nearly doubled her railway lines in the course of twenty-one years, will still require a far greater space of time in which to concentrate her troops on the frontier than her two neighbours—Germany and Austria-Hungary.

When we come to consider America, naturally the railway lines of the United States play the most important part. As long ago as the

year 1890, the great Republic had 268 thousand kilometers of railways, that is to say 45 thousand kilometers more than the whole of Europe together. By the year 1911, the United States railways covered 397 thousand kilometers, making 50 thousand kilometers more than the whole of Europe. In spite of these figures, the railway net work of the United States, which has a density of 4.3 kilometers per hundred square kilometers, is far behind that of all the great European countries, with the solitary exception of Russia. The railway lines of the great South American Republics have also undergone a vast development in the course of the 21 years in question. For instance, Brazil has increased her railways from 9,500 to 22,000 kilometers, Chile from 3,000 to 6,000, Uruguay from 1,100 to 2,600. But the Argentine Republic can show a far greater increase during the 21 years in question, i.e. from 9,800 to 31,600, an increase of more than three-fold. In Asia, the only country that had any railway communication of importance in the year 1890 was British East India with 27 thousand kilometers, as, at that time, the railway lines of the whole of Asia only covered about 34 thousand kilometers. From this we see that, in those days, 4/5 of the railway lines of Asia belonged to British India. But the figures for the end of 1911 record an entirely different picture. It is true that the railway lines of India have increased to 53 thousand kilometers during these 21 years, but all Asia can now boast of 105 thousand kilometers of railway lines, so that India only owns about 50 per cent. of the entire railways of this Continent. In the meantime Siberia, which had no railways at all in the year 1890, has constructed 11 thousand kilometers of lines; China has 10 thousand and Japan has developed her railways from 2,300 to 10 thousand kilometers. In the year 1890 the railways of Asia Minor only covered 800 kilometers, whereas by the end of 1911 the amount quoted is 5,000, so that here too great progress has been made. In the year 1890, Africa had fewer railways than any other Continent, the actual figures being 9,400 kilometers. In the course of the 21 years in question, the railway lines of this latter Continent have increased more than four-fold, the actual length of lines now amounting to 41 thousand kilometers. In the year 1890, the German, French, English and Portuguese colonies in Africa had between them only 910 kilometers of railway. By the end of 1911, these figures had increased to 11 thousand kilometers; from this it will be seen that the European Powers are accomplishing a great work of progress in this direction; more especially are we struck by this fact, if we bear in mind that the 11 thousand kilometers quoted do not include the railway lines of the most important Colonies of France and England, i.e. Algiers and Tunis and United South Africa.

Since the year 1890, the railway lines of Algeria have increased from 3 thousand to 6 thousand kilometers; in like manner the railways of Cape Colony have doubled themselves, the figures showing an increase from 3 to 6 thousand, in the case of Natal, the railway lines have grown from 500 to 1,800 kilometers.

Of all the Continents, Australia shows far less rapid railway development, during the last twenty-one years than any other country. In the year 1890, the railway lines of Australia covered nearly 19 thousand kilometers, and by the end of 1911 the figures amounted to 32 thousand. We see therefore, that the Australian railway lines have not nearly doubled their extent in the course of these twenty-one years, whereas those of Asia have increased three-fold and those of Africa four-fold.

The total length of railway lines throughout the entire world, in the year 1890, amounted to 617 thousand kilometers; by the end of 1911, these figures had increased to nearly 1,100,000. All these figures show that the most important existing means of communication has developed in a most remarkable manner, throughout the entire world, in the course of the period in question.

GAS ELECTRIC RAILWAY TRAIN

On the line of the Pittsburg and Lake Erie Railroad Company a train consisting of a gas electric motor-car, by the General Electric Company, of Schenectady, and a trailer built by the Wason Manufacturing Company, of Springfield, Mass., has been in operation for nearly a year. It runs on the main line between the ordinary steam-driven train, and is being utilized for local passenger service between Pittsburg, Pennsylvania, and the town of College. The distance between Pittsburg and College is just over 31 miles, and the run includes three stops. It has been found that the train can average 50 miles an hour, and the actual times recorded between the terminal stations with three stops have been as low as 49 min., while with two stops the distance has been covered in 42 min. The placing of this train between the ordinary steam trains implies considerable confidence in this method of equipment, as the line is used not only for a heavy passenger service, but also a large goods traffic, and any interruption would have serious consequences.

The train is equipped with motors of a total horse-power of 200, and the motor-car, which seats 42 persons, is 42½ ft. long and 10 ft. 5 in. wide. It is rather shorter than the usual gas electric motor-car as developed by the General Electric Company, because it has been designed especially for use with a trailer. This trailer is 38 ft. long over the body and seats 80 people. The motor-car has a rear-platform entrance, and the trailer has platform entrances both at the rear. The motor-car has three sections, of which one is a smoking department, the second, 12 ft. long, is a front cab in which the engine and dynamo, controller, etc., are installed, and the third, 6 ft. long, is for luggage. The total weight of the motor-car is 36 tons, and that of the trailer 22 tons, so that there is a good distribution of weight over the total wheel base.

SURFACE-OILED ROADS IN THE PHILIPPINES

The use of a surface treatment of oil on the macadam roads of the Philippines is reported in the "Quarterly Bulletin" of the Bureau of Public Works as proving satisfactory even under comparatively heavy automobile traffic where proper attention has been given to the methods of application of the oil. Experiments have been conducted on small areas for some time and a study of the results of previous practice has led to several changes. Oil was applied to about 4½ miles of the Manila-South Road last January. Preparatory to the surface treatment of the oil the road was broomed, but only the finer portion of the material was removed. No water was applied, as was done before, and the oil, spread in quantities approximately ½ gal. per square yard, was allowed to stand for thirty to seventy-two hours, until the surface was dry, before being covered with dredge-run gravel. Previous practice had been to cover it with sand from three to five hours after the oil application, and in this way much of the binder was absorbed by the sand covering and thorough penetration of the road base was prevented.

It has not been found necessary to use road rollers after the gravel has been spread, as the local traffic seems to consolidate thoroughly the binder and the surfacing. Previously the asphalt-like surface was oftentimes too thin to stand the traffic and would break through after a few months of use. Now there is no dust raised by the fastest moving automobile.

THE WOODS OF THE PHILIPPINES

A great deal has been heard but little known in the United States of the rare and beautiful hard woods of the Philippine Islands, and some of the stories told may have suggested that the imagination had not been neglected, but a practical demonstration that these stories were founded on fact may be found in the offices of General Frank McIntyre, Chief of the Bureau of Insular Affairs, at Washington, where there has been received from the Islands enough furniture to furnish two office rooms. Many persons have called out of mingled interest and curiosity and have critically examined this furniture in admiration that could not be suppressed.

About a year ago, as the story goes, it occurred to the Insular Bureau, which has charge of the affairs of civil government in the Philippines and Porto Rico as well as of the affairs of the customs receivership of Santo Domingo, that it would be a good idea to have in Washington, for the inspection of visitors and others interested in the far away islands, an exhibit of one of their valuable resources. This idea prompted the thought that the exhibit might be made useful as well as ornamental, and it was therefore decided to have made in the Philippine Islands, out of the native hardwoods and by native workmen, enough furniture for the rooms in the War Department building occupied by the Chief of the Bureau of Insular Affairs to show the possibilities as well as the beautiful color and grain of the Philippine hardwoods.

The Governor-General of the Islands was consulted and gave his prompt and hearty approval, and the action necessary to put the thought into effect was taken at once. Drawings and specifications as to dimensions and style were prepared in Washington and forwarded to Manila, and officials regard it as a compliment to the American instruction as well as the native mechanical dexterity that these drawings and specifications were followed down to minutest detail and nothing added or omitted. The furniture was shipped half way round the world and recently arrived in exceptionally good condition. It is made of red narra, or Philippine mahogany, and is of a light claret color shading to slightly darker, has a natural finish with high polish, and is strikingly grained.

This furniture shows the ability and dexterity of the natives in their work as well as their capacity to learn. They turn out only manufactures of the best quality and of the highest grade of workmanship. They depend entirely on local material for their output, and the Filipinos are taught the value of native raw material and products.

The policy of the government from the very beginning has been one of preparing the Filipinos for industrial efficiency. In the schools this is particularly noticeable. Due to the favorable system of organization, an industrial and vocational program of education has been put into operation which reaches down into the very primary grades of the public schools and starts the boys and girls on an industrial career that turns them out productive members of society.

In addition to making use of the fine native lumber found in such abundance, other products of the country, the existence of which in many cases was scarcely known to the Filipinos much less their commercial value appreciated, have been put into the hands of the pupils in the schools and under the guidance of the native teachers and the supervision of the American teachers made into products for the markets of the country.

In the variety of natural colors and multiplicity of shapes and uses no baskets in the world can surpass those produced by the pupils of the public schools of the Philippines. They make hats in durability and texture equal to the

Panama hat. Indeed, many of the so-called Bangkok hats came from the Philippine Islands. The Filipino girls of the public schools make lace and embroidery which equals the finest quality of hand-made product of Europe. Many other products such as mats, slippers, cloth, etc., more local in character, are made in the industrial classes of the public schools.

A noted educator from the United States, after inspecting the work of the Philippine schools and the industrial features in particular, remarked that, "Other nations one of these days will be coming to the Philippines to see how the educational triumphs have been won."

Bilibid prison at Manila is considered one of the best industrial schools for adults in the world. It is not convict labor in the accepted sense of the word. Very early in the history of American occupation of the Philippine Islands an industrial department of Bilibid prison was established. Each prisoner is permitted to select such employment as he can best do; otherwise he is assigned to some work, but each one must learn a trade or vocation. It takes them away from their old environment for several years where they might become confirmed criminals, a menace to society, and a burden to the administration. Most of them went into Bilibid prison irresponsible and incapable and are turned out efficient workmen and law-abiding citizens of the community in which they live.

As a relic of Spanish times all the woods in the Philippines are divided by law into four groups. The grouping has been slightly changed since American occupation, but it still fairly represents the preference of timber users. Narra is always placed in the first, or highest, group in the classification of the woods of the islands and is of a singularly rich and beautiful color.

Narra is among the very highest priced woods because of its beautiful color, durability and adaptability. The Philippines produce harder and better woods for exterior work, but they do not furnish anything superior for interior decoration or furniture. The wood of narra is moderately heavy, moderately hard, very durable, and is seldom, if ever, attacked by the anay (white ant). It seasons well when properly treated and takes a fine finish. The hard wood of narra is white, yellow or red, and the sapwood nearly white. The grain is rather fine, but irregular, and very beautiful when quarter sawn. Narra is used principally for fine furniture, cabinet-making and interior house trim. The provinces of Cagayan, Mindoro, Tayabas, Albay, Isabela, Moro and Sorsogon lead in the production of narra.

Narra is divided commercially into two varieties, called Red and Yellow. So far as is known, this division is not a specific one, but a difference due to the habitat in which the tree grows. Both species have the red and yellow varieties. The red grows in the hilly country, near the streams generally, and the yellow is found in the flats near the seacoast.

Slabs are obtained from the buttresses of narra, from which large one-piece table tops are made. These are sometimes 6 feet and over in diameter. Narra wood is often finished in its natural color and sometimes stained brown or dark red.

This class of wood, formerly very popular for pianos and high grade furniture, is becoming very scarce in the United States and is much imitated by stains or veneers. It is not generally known that there is almost an inexhaustible supply under the jurisdiction of the American government on which no import duty need be paid.

It has been estimated that there are as much as 40,000,000 acres of public forest lands in the Philippine Islands. The Director of Forestry says in a report:

"In a recent visit to the southern islands of this group I was impressed with the amount of timber standing on the smaller islands; frequently the topography was such that it could be exploited with facility. I saw tracts of

virgin forest where more than 10,000 cubic feet of magnificent timber per acre was standing: trees 150 feet in height, with trunks clear of branches for 80 feet. There are many millions of cubic feet of timber in these forests that should be cut in order to properly thin out the dense growth; for instance, where there are three or four trees growing on a space required for one, that one so freed would put on more good wood each year than the four together.

"It is safe to state that the number of native tree species found will be nearer 500 than 450, a great majority of these undoubtedly being hard woods. The edges of the great forests have been scarcely cut away and 50 valuable hard woods given to the world, the full value of which species has not been demonstrated as yet. 665 native tree species are now listed.

Some idea of the present and potential value of the islands in hard wood alone may be gained from the bare statement that there is enough hard wood standing in the virgin forests of the islands several times over to pay for their original cost to the United States even if sold at only a nominal price per acre.

NAIL TRADE IN JAPAN

Until recent years there were no nails manufactured in Japan, and the imports of nails amounted to over 600,000 casks yearly. The demand for nails increases yearly, and the Government, hoping to stop the volume of these imports, recently increased the duty to 1.25 yen a cask, and at the same time ordered the Wakamatsu Iron Foundry to manufacture wire to be used in the manufacture of nails. The Wakamatsu Iron Foundry installed nail-wire making machinery, and soon after this the Yasuda Company began manufacturing nails at Yawata, Kyushu, and in Tokyo, on a large scale, using the wire manufactured by the Government Foundry. The Kishimoto Company, of Osaka, seeing this business to be a profitable one, established a nail factory at Amagasaki, near Osaka, and this factory and the two factories of the Yasuda Company are now working at full speed in order to supply the demand. The capacity of the two Yasuda Company factories is 20,000 casks monthly, and the capacity of the Kishimoto Company is 12,000 casks monthly; a total of 32,000 casks monthly and 384,000 casks yearly. This number is only about two-thirds of the total amount annually imported.

The authorities blame the excess of imports on the inability of the Wakamatsu Iron Foundry to supply all the wire needed by the three nail factories. These factories are capable of producing much more than they are at present turning out, and as it is said that the Wakamatsu Foundry will soon instal more machinery for the manufacture of nail wire, it is expected that the quantity of nails manufactured at home will soon equal the demand for them, and thus a large item in the unfavourable balance of imports will be cancelled, and import of nails in a few years be completely stopped.

The progress of this manufacture during the past few years illustrates the remarkable advance of Japanese manufacturing industry. If such advances continue to be shown in other branches of manufacturing business the time is not far off when Japan may enjoy complete economic independence.

The *Echo de Tientsin* publishes the details of a new limited French Company started in Shanghai, called La Société Franco-Chinoise de Batellerie et de Cabotage en Chine, of which Messrs. Nicolas Tsu, J. O'Niell, and Henri Bourbonlon, all of Shanghai, are the first directors, and Messrs. Henri Charrey, Architect, and Louis Tsu, secretary to the com-pradore of the Banque de L'Indo-Chine, at Shanghai, are the first managers. The capital is Tls. 40,000, and the company will employ vessels in the coasting trade.

THE LODGE AND SHIPLEY "SELECTIVE HEAD" LATHE

To combine strength, simplicity and durability, the *selective* type automobile transmission has been adopted for the gear box drive of the new Lodge and Shipley "Selective Head" lathe; this permits any one of the spindle speeds to be *selected* instantly—hence the name "Selective Head."

A constant speed single driving pulley running at a high belt velocity delivers an excess of power to the cutting tool under all conditions. As the diameter of the work increases the gear ratios and the torque proportionately increase. Thus lathe work requiring a maximum amount of power can most advantageously be handled in the Lodge and Shipley "Selective Head" lathe.

Power is transmitted through hardened steel gears mounted on shafts running in ball bearings. This eliminates the great frictional loss in journals and by soft gear teeth common to all other types of single pulley heads. As the result of these and other refinements the "Selective Head" attains an exceptionally high mechanical efficiency. Wear of gear teeth and of bearings is reduced to a minimum, which makes it possible to produce nicely finished work free from gear marks.

Headstock Casting:—The headstock is made of box section, with the sides extended up to the center line of the spindle, which makes an unusually rigid casting. Further stiffness is added by the internal bracing with both longitudinal and cross ribs. The back of the headstock is planed to receive the gear box which is made as a separate unit. Covers totally enclose all gearing.

Spindle Speeds:—There are six speed changes in the gear box. From the gear box the drive is either direct to the spindle or through shifting back gears in the headstock proper, giving twelve spindle speeds in all back geared lathes from 14" to 27" both inclusive. The 30" and 36" lathes can be provided with triple gearing when so ordered, and this gives eighteen speeds. These two sizes are also furnished without triple gearing, and they then have twelve changes of spindle speed. In the triple geared lathe there are six speed changes by direct drive from the gear box, another six changes through the back gears and the third set of the slowest six speeds is obtained through the triple gearing driving into the internal gear of the face plate. On the 42" and 48" machines the triple gearing is always supplied in order to get the speeds sufficiently low to accommodate the large diameters.

Friction

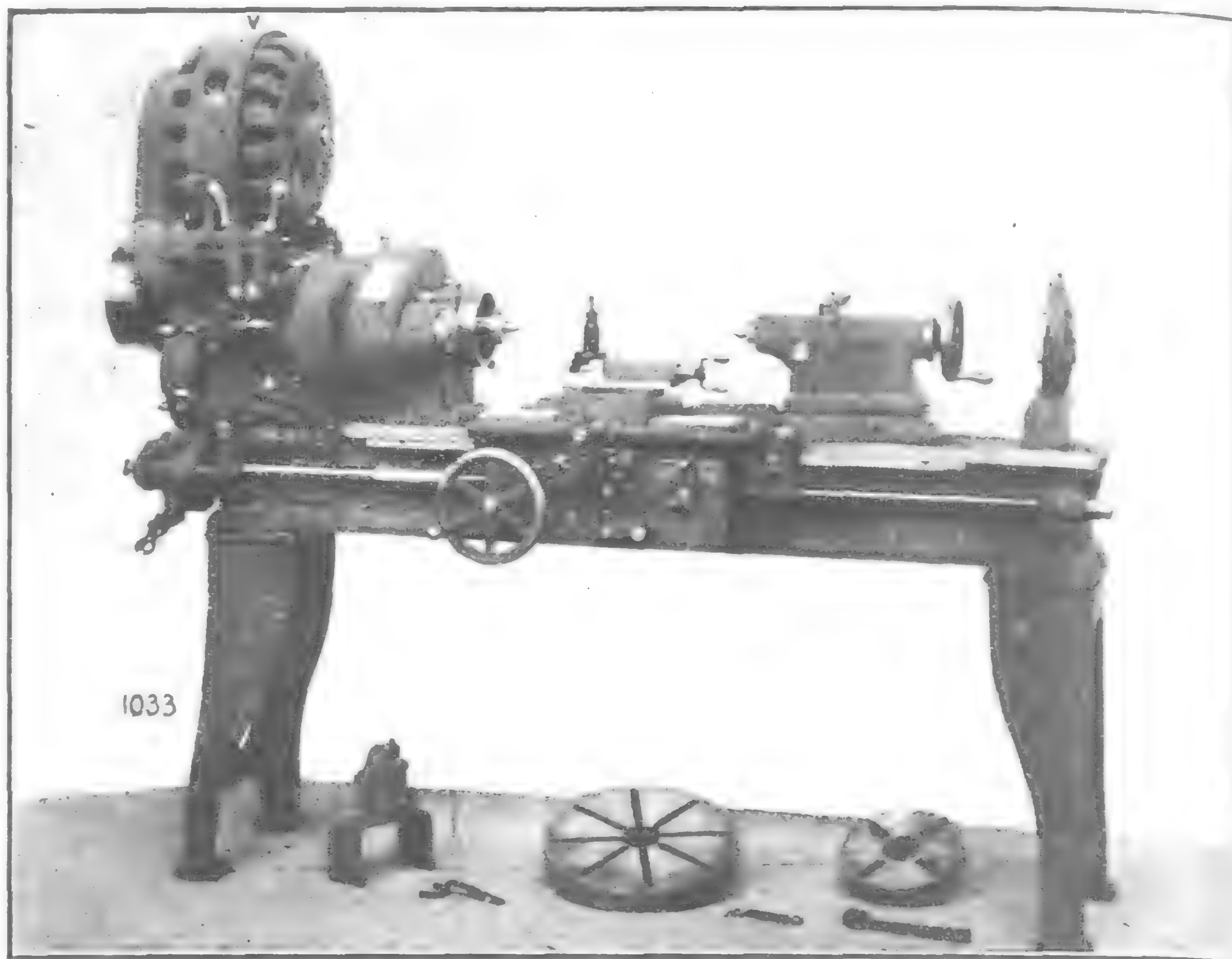
Pulley:—An extended flanged hub attached to the gear box carries the driving pulley and thus relieves the driving shaft of all belt pull. Inside the pulley are two frictions, one of which drives the initial shaft direct, while the other drives it at a back geared speed. The friction is at the initial point only, to insure a powerful drive, and the friction will easily slip the belt. The ratio of the direct speed to the back geared speed is about 2.6 to 1. This is approximately the ratio between the finishing and roughing speeds on a given diameter of work; therefore, in order to increase the speed from a roughing to a finishing cut, the gear shift does not have to be made, but it is only necessary to shift the friction lever from one side to the other.

The friction pulley is entirely enclosed at its outer end to retain the oil for the friction surfaces. A combination oil and belt guard is provided at the inner edge to prevent throwing oil on the belt.

Transmission Gears:—All gears within the gear box are of the stub tooth 20 degree pressure angle type. They are made from chrome nickel steel, heat treated and hardened. After hardening the bores of the gears are ground concentric with the pitch circles; finally the gears are mounted on an arbor in a special machine where the teeth are lapped, so that any distortions in the hardening are removed. This insures perfectly true gears, easy rolling action and noiseless operation from the first.

Chrome Nickel Steel Gears:—All of the transmission gears in the gear box are made

from chrome nickel steel, heat treated and hardened. This gives a tensile strength of about 260,000 pounds per sq. in., an elastic limit of about 246,000 pounds and a scleroscope test of "seventy degree" hardness. This produces a gear of fibrous structure and exceptional strength and resiliency. It not only results in practically indestructible



LODGE AND SHIPLEY "SELECTIVE HEAD."—14" Motor Driven "Selective Head" Lathe. Constant speed motor is mounted on the head and direct connected through spur gears.

tible gearing, but also reduces the frictional loss in transmission because of the great hardness of the gear teeth and the splendid wearing surfaces which they present to each other.

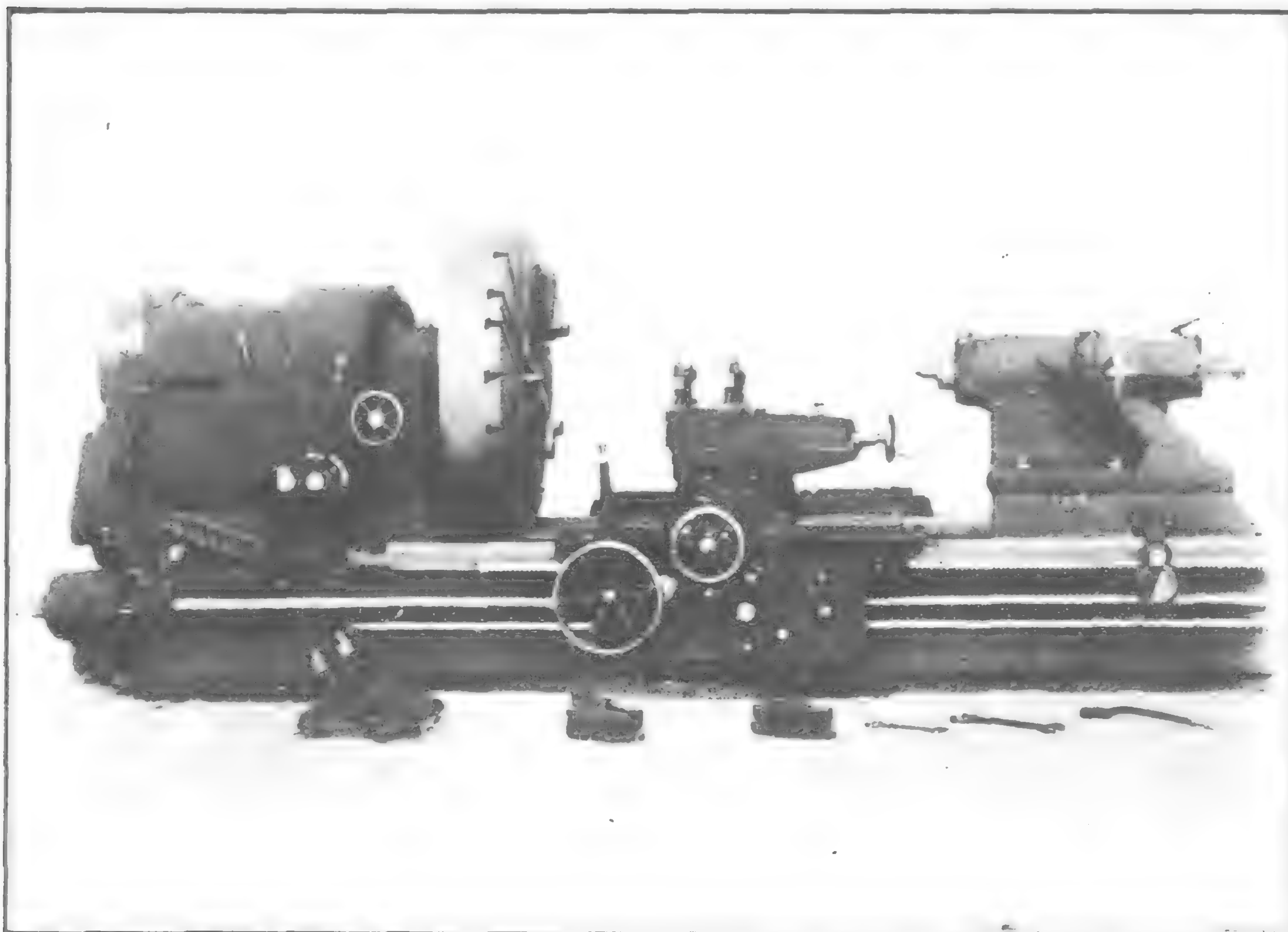
Gear Box:—The entire speed changing mechanism except the back gears of the headstock proper is contained in the gear box which is an independent unit tongued and bolted to the back of the headstock. It may be removed at any time without affecting the other parts of the head, or without removing the motor in the case of a motor drive. The gear box is oil tight and dust-proof. The gears run at all times partly submerged in oil.

The initial shaft of the gear box, which has either direct or back geared speed, transmits power to the driven shaft through sliding gears. There are three speed changes to the driven shaft by these sliding gears, which, with the two speeds of the initial shaft, give six changes of speed obtained within the gear box. The initial shaft in the gear box which receives the sliding gears has its four keys formed upon it. There are no screws or cotter pins inside the gear box, nor any other small parts which might work loose and get into the running gears.

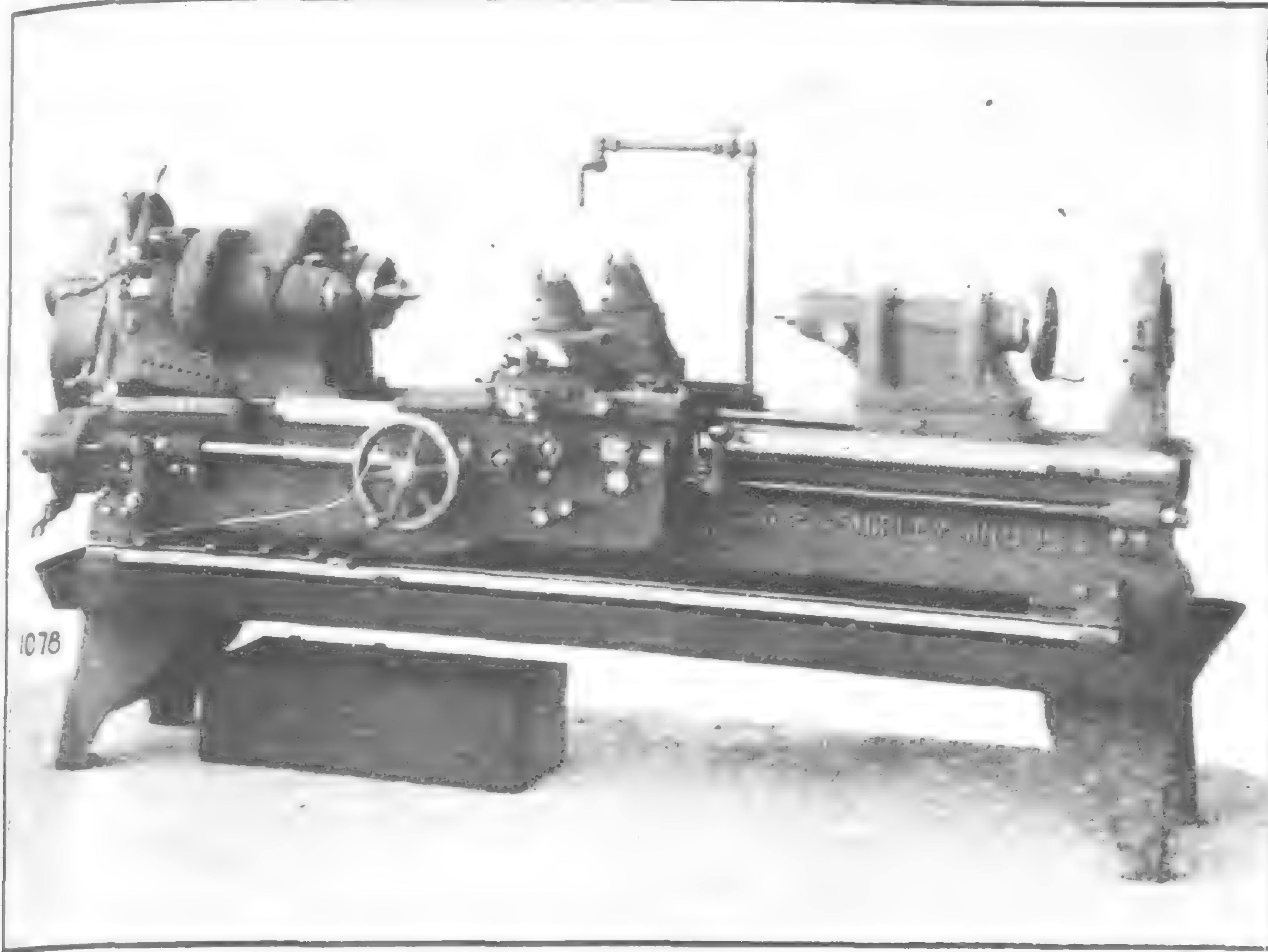
Ball Bearings:—Both shafts in the gear box in all sizes of lathes are mounted in anti-friction ball bearings. Threaded dust plates retain the ball bearings in their respective seats and prevent the admittance of dirt or grit to either the ball bearings or the gear box. No shaft runs at a higher rate of speed, even in the small lathes, than 375 R.P.M. This comparatively low rate of speed and the anti-friction properties of the ball bearings help maintain an exceptionally high efficiency of transmission.

Speed Control:—The six speeds provided by the gear box are obtained through two vertical levers, conveniently located on the front of the headstock. The lever nearest the operator controls the two frictions in the driving pulley and stops, starts and gives fast and slow speeds by moving the lever to the right or left. The other vertical lever shifts the gears and must be moved to the right or left and also in or out to select the required gear. The horizontal lever operates both a positive stepped clutch on the spindle and the sliding back gear pinion which is interlocked with the clutch so that both cannot be engaged at the same time.

A plate on the front of the headstock gives a complete list of all speeds and position of levers for obtaining them.



LODGE AND SHIPLEY, "SELECTIVE HEAD."—48" "Selective Head" Lathe.



LODGE AND SHIPLEY, "SELECTIVE HEAD."—18" Belt Driven "Selective Head" Lathe with manufacturing equipment of multiple stops for length and cross feeds, pan, pump, tubing and connected compound and plain rests.

Back Gears and Triple Gears:—The back gearing is located at the front of the head stock. The back gear shaft and pinion in lathes from 14" to 36" sizes both inclusive, are cut from a single steel forging. The teeth of the pinion are hardened. The shaft is journalled in continuously lubricated bronze bushings. The triple gear is operated by a hand wheel which slides the triple gear pinion into or out of mesh with the internal face gear. All headstock driving gears are of steel, and as previously explained, gears subjected to the most wear are of chrome nickel steel heat treated and hardened. On all lathes, the gearing is designed to give practically uniform speed progression throughout the entire speed range.

Spindle and Spindle Bearings:—The spindle is of large diameter and made from chrome nickel steel. The end thrust is taken against the rear housing by alternate bronze and hardened steel thrust washers. The spindle bearings are of special composition white metal, renewable and interchangeable, and are continuously lubricated by wick oilers from large oil wells. These white metal bearings are faced and turned in halves to exact gauge size; the headstock casting is reamed to this same size; the screw holes are drilled by jig.

Spindle Nose:—The spindle has a double nose, consisting of an inner cylindrical portion and an outer cup. The cup is threaded internally to hold the chuck plate in position and the end is faced to provide a very large diameter shoulder against which the face plate is tightened. The inner cylindrical portion of the nose is left blank and extends beyond the outer nose, so as to form a pilot to receive the face plate or chuck plate. This pilot at all times accurately centers the chuck plate and by centering the bore of the chuck plate before the threaded portion is reached, insures that the threads engage easily and that the chuck plate may be readily drawn squarely against the face of the outer nose.

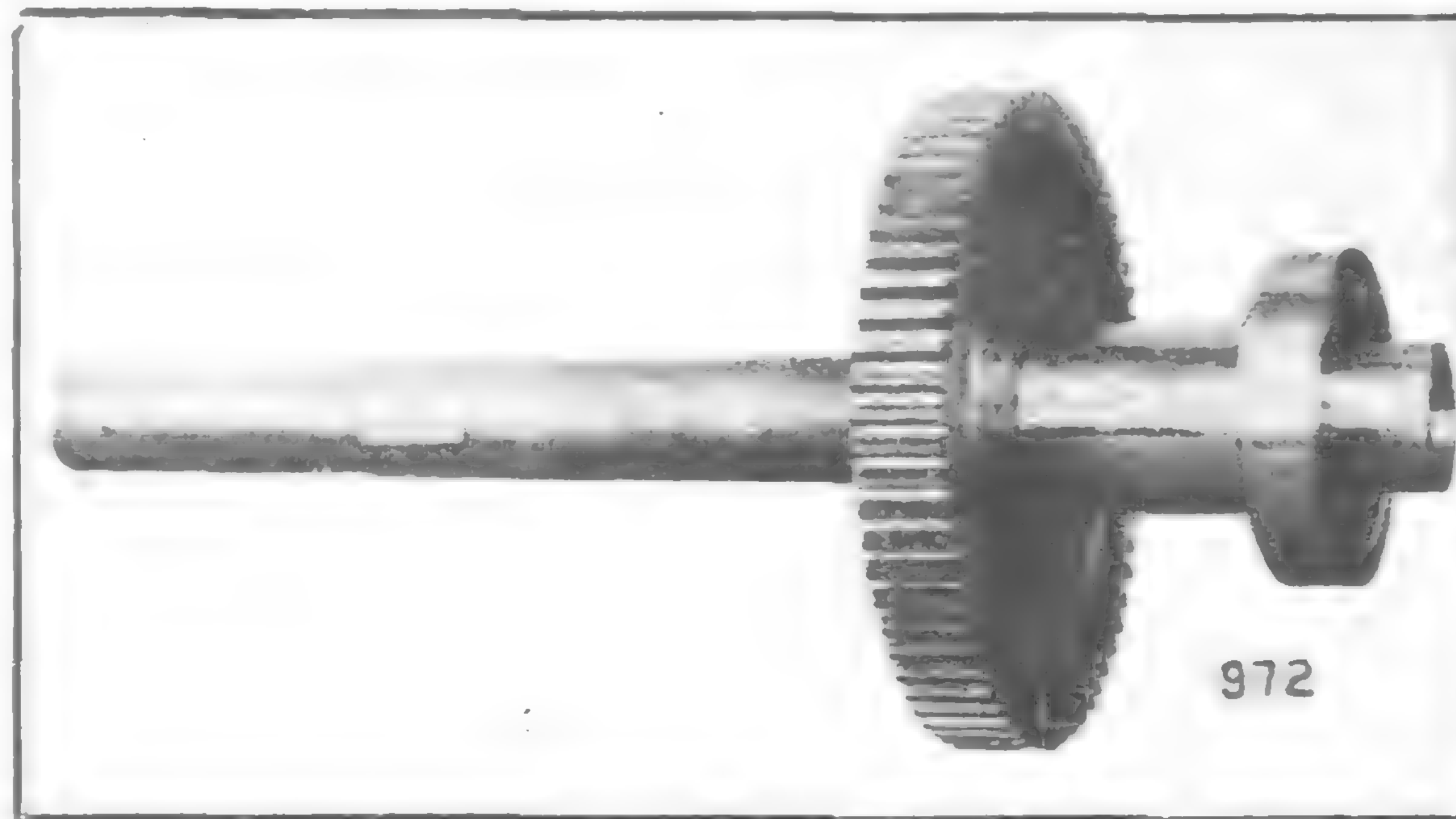
It is a comparatively easy matter to accurately fit a chuck plate to this spindle, as the bore may be reamed standard size to fit the pilot and the thread is used only to hold the plate in position against the face of the cup. The threading of the chuck plate is easily done, as it is a job of external chasing. The large diameter of the shoulder afforded by the cup prevents the face plate becoming stuck to the spindle nose and makes it always an easy matter to remove the face plate or chuck.

Spindle noses of "Selective Head" lathes from 14" to 20" both inclusive are made to the same standard, so that chucks will interchange

from one lathe to another between these sizes. Similarly another standard is used for all lathes from 22" to 36". As the larger lathes are triple geared, there are but the two sizes of spindle noses for the entire range of lathes.

No countershaft is necessary with this lathe if the machine can be placed near the line shaft. Drive may be either with straight or quarter turn belt.

If a countershaft is required, either a single speed plain tight and loose pulley counter shaft



LODGE AND SHIPLEY, "SELECTIVE HEAD."—Spindle and face gear from "Selective Head" Lathe showing new type spindle nose.

or a double friction countershaft may be furnished.

Motor Drive:—Any standard make of motor, either direct or alternating current, constant or variable speed, within reasonable limits of size and speed can be mounted on the top of the headstock and direct connected through gearing. A gear which contains the same friction mechanism as the pulley, is substituted for the pulley at the end of the gear box. A suitable casting is mounted at the end of

the headstock cover and carries an intermediate fibre gear running in positively lubricated journals. This casting serves as a gear guard and cover for all of the motor drive gears. A pinion on the armature shaft meshes with the intermediate fibre gear, thus giving a direct drive to the gear box of the headstock.

The user may at any time drive a regular belt driven "Selective Head" lathe from an individual motor placed on the ceiling or on the floor and direct connected to the head stock pulley by a belt constituting the "Simplicity" motor drive. A constant speed motor is generally used for this style of drive.

Lathe Details:—The bed is made from close grain iron of high tensile strength and the top is cast against a chill which makes the top of the bed very hard and dense, greatly increases the life in alignment, and so closes the pores of the iron that dirt and grit cannot become imbedded in the ways to wear the carriage by a lapping action.

The tail stock has floating binders to insure correct alignment of the tail stock spindle; exceptionally long spindle of tool steel; barrel extended beyond the face of the tail stock to afford a firm support to the spindle at all times. Clamping bolts for holding the tail stock to the bed are operated from the top of the barrel. In 22" lathes and larger a pawl on the base of the tail stock engages the rack in the center rib of the bed to afford a positive brace.

The quick change gears for feeds and threads are of drop forged steel, located beneath the headstock, and firmly supported in the walls of the bed. Changes of feed or thread can be quickly made while the lathe is under cut.

The carriage is gibbed inside and out, has oil trough around the front and rear wings, and the extra wide bridge takes a supplementary scraped bearing against the inside horizontal and vertical flat surfaces of the bed, thus providing a positive support directly in line with the tool thrust.

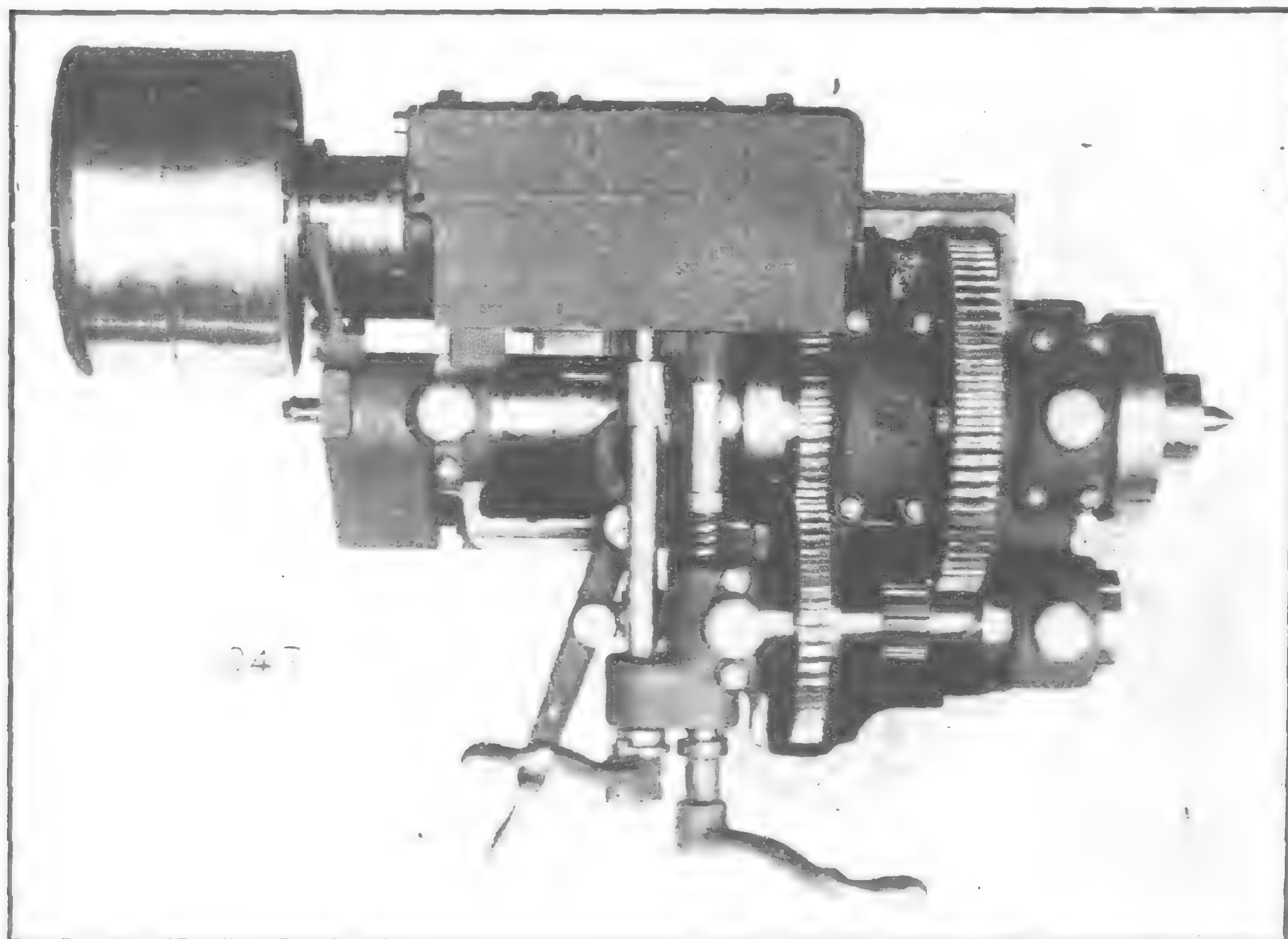
The compound rest has a special square base so designed that the top slide cannot be overhung, which provides a solid metal-to-metal anvil support under the tool to prevent vibration.

The apron is self-contained and double walled with studs supported front and rear. All gearing except the frictions is of steel, and a stub tooth rack pinion insures greater strength.

Manufacturing equipment consisting of multiple stops for length and cross feeds, connected compound and plain rests, pan pump and tubing and a four-way tool block can be furnished with any of these lathes. These are valuable additional appliances for turning repetition work.



LODGE AND SHIPLEY, "SELECTIVE HEAD."—Rear View of "Selective Head."



LODGE AND SHIPLEY, "SELECTIVE HEAD"—Interior of "Selective Head."

THE BREWING INDUSTRY OF JAPAN

In 1876 the Hokkaido Government instituted a series of experiments in the culture of barley and hops which proved so successful that the Government was encouraged to build a brewery at Sapporo where the manufacture of beer was first attempted in Japan.

In 1887 many private companies were organized to exploit this growing business; the Ebisu Beer Company at Meguro, near Tokyo; the Asahi Brewing Company at Fukuda, Osaka; and the Kirin Brewing Company at Yokohama, were all built at that time. In 1895 the Kabuto Brewing Company was also established in Tokyo.

Beer had become a popular drink in many parts of Japan, some time before the establishment of this first brewery in the Hokkaido. It had to be imported from Europe, and in 1876 imports reached the sum of 400,000 yen. The beer brewed by the Bath Brewing Company, an English concern, was the most popular at that time. In 1887, when so many domestic companies were organized, beer had been imported to the value of 460,000 yen. As the production of the home breweries increased the amount imported gradually decreased, until, in the thirtieth year of Meiji (1895), they ceased altogether, and now the only beer imported is some German and American beer which is consumed by the foreign population.

Quite the contrary to conditions in 1876, when the only beer in Japan was imported beer, the present production is so great that the yearly exports of beer are valued at over 700,000 yen.

Statistics of production of the different breweries show a total of over 6,760,039 gallons of beer brewed in Japan during 1912. Compared with the other countries of the world this is an insignificant amount. The number of great breweries in the whole world is about 40 and each of them brews in one year more than the total production of all the breweries of Japan in 1912. It will thus be seen that the brewing industry in Japan is still in its infancy. But here it must be noted that in Japan "saké" takes the place of beer which abroad is a cheap alcoholic beverage very popular because it is usually considered a "light" beverage on account of the very small percentage of alcohol which appears in its composition. Since olden days in Japan "saké" has been the drink of all classes of people; it is a cheap liquor and is sold at a price which puts it within the reach of the poorer classes, who, abroad, drink beer, which is, for them, cheaper than wines, brandy, whiskey, etc. In 1912 over 150,000,000 gal-

beer brewed was only 185,000 gallons, but in 1912 the Dai Nippon Beer Brewing Company exported 330,000 gallons, and the Kirin Brewing Company and the Kabuto Company exported together 70,000 gallons, a total of 400,000 gallons. Since 1887 the increase of production has been over 10 per cent. yearly.

It is a remarkable fact that the world's consumption of beer also has increased by about 10 per cent. yearly. Especially in the United States has this increase of consumption been noticeable. Formerly Germany occupied the first place in the consumption of beer, but now the United States consumes greater quantities than Germany and stands in the first place as a consumer of beer. In 1890 the United States produced over 400,000,000 gallons of beer. In 1910 this amount had increased to over 1,000,000,000 gallons. At the same time the percentage of increase in beer production is keeping pace with the percentage of increase in population. This is to be attributed to the strong temperance movement in the United States which is rapidly causing many people to abandon the use of wines, brandy and whiskey. Their place in the home, restaurant and public bar is being taken by beer.

Whiskey, brandy, and "shochu"—a Japanese spirit—have about 40 per cent. of alcohol in their composition; "saké" contains about 15 per cent.; wines only about 10 per cent.; while Sapporo, Ebisu and Asahi beers contain only about 4 per cent. of alcohol. Münchener Beer (brewed by the Dai Nippon Brewing Company, the Ebisu, Asahi and Sapporo Brewing Companies also) contains only 6 per cent. of alcohol.

Last year all business enterprises in Japan suffered from the depression caused by the death of Meiji Tenno. The brewing industry was alone exempted from this depression. The increase of 10 per cent. being, as usual, shown in the production of the brewing companies. The first half of 1913 shows an increase of about 10

per cent. in production over 1912. The present difficulty in the way of increased exports of Japanese beer is the problem of competition with foreign beers. Japanese beer is exported to Manchuria, North and Central China, Asiatic Russia, and to the South Sea Islands, but in all of these places foreign beers are on sale at prices which it is very hard for the Japanese companies to meet. The most formidable competitors in Central and Northern China are the Union Brewing Company at Shanghai, and the Tsingtau Brewing Company at Tsingtau. The Dai Nippon Brewing Company has a branch office in Shanghai where it has been notably successful in competition, forcing the Union and the Tsingtau Brewing Companies to lower their prices, and this company has gradually extended its business until it has about two-thirds of the barrel beer trade in its hands. This company is also successfully monopolizing the sale of bottled beer. In South China Japanese beer is making successful progress; the German brewery and the Orient Brewing Company of Hongkong are the only competitors in that market that have been difficult to compete with. In Singapore, the Malay Peninsula, Java, and Sumatra, Japanese beer is making successful progress together with other goods of Japanese origin.

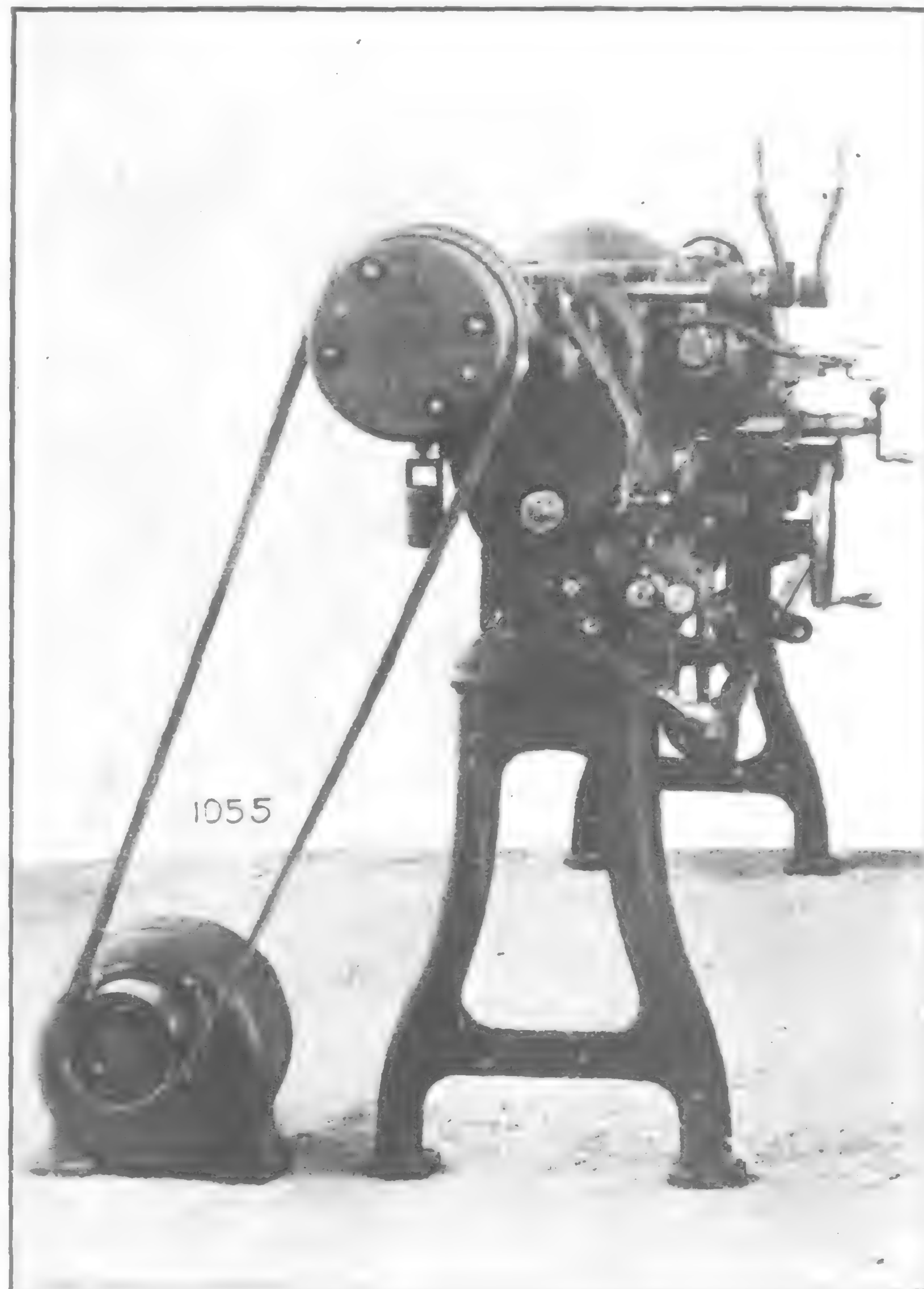
In 1888 the whole amount of

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The exports of beer are gradually increasing and the breweries are preparing to increase their productive capacities in order to raise their production to over 10,000,000 gallons, to which amount it is expected the export trade will reach within a very few years.

Up to a few years ago the Dai Nippon Brewing Company used Australian and German malt, but now this company is buying only home-made raw materials. The quality of the home-made malt is excellent, and some of it is even said to surpass the foreign imported malts.



LODGE AND SHIPLEY, "SELECTIVE HEAD."—16" "Selective Head" Lathe with "Simplicity" motor drive. Motor is placed on floor and belted direct to the regular driving pulley.

OIL FIELDS IN TIMOR

The following information regarding these oil-fields has been furnished to the *Hongkong Daily Press* by Mr. Theo. Bunje, of Hongkong:—

During the last few years considerable interest has been manifested in the development of petroliferous land in the Island of Timor. Timor Island is situated 9 degrees S. lat. and 125 degrees E. long. It is 263 miles in length, and its greatest breadth is 60 miles. The island is about 2,100 miles from Hongkong and 430 from Port Darwin (the nearest Australian port). The Eastern half of the island belongs to the Portuguese Government and the rest to the Dutch.

The International Petroleum Co., Ltd., Hongkong, holds several oil concessions in the Portuguese portion of the Island. Each concession comprises an area of about 1,250 acres, or 2 square miles. In one of the concessions five miles from the sea coast oil was obtained at a very shallow depth. The oil is of a brown colour, very fluorescent without any disagreeable odour and yields a high grade petroleum. Tested by the Hongkong Government Analyst it showed a flashing point (Abel close test) of 112 degrees F., specific gravity of .8403.

Boring down to a depth of 240 feet, with up-to-date American machinery and tools, a very strong flow of petroleum gas was experienced, strong enough to raise water, which is used for drilling in the pipe to a height of 200 feet.

One of our experts and drillers remarks in his report that there is an immense body of oil underlying the land in which the gas has its origin, and the oil is of a very high gravity.

The gas is merely the escape of the lighter properties of the oil, and it is only the high grade oil that contains the lighter properties in sufficient quantities to throw off a flow of petroleum gas.

In another of the International Petroleum Co., Ltd.'s, concessions also on the South coast of the Island and about eight miles from the sea, large pools of viscid black oil were found, with a flash point (Abel close test) 163 degrees F. This oil is very suitable for fuel oil. Immense quantities of lime-stone coated with bitumen and ozokerite cover the ground and yield from 100 parts by weight the large amount of 24 parts of crude heavy petroleum oil, having a specific gravity of .9547 at 15.5 degrees C. A very interesting report appears in *The Petroleum Review* of September, 1913, by Mr. E. J. Green, General Field Manager for the Timor Oilfields, Ltd. On several occasions I had the pleasure of meeting Mr. Green in the Island of Timor, and I can fully verify the following extracts from his report:—

"The Island of Timor is divided in about equal proportions between the Dutch and Portuguese Governments, the Eastern portion of the Island being Portuguese.

"Very little is known at present concerning Dutch Timor, owing to lack of encouragement from the Government, while prospecting by private individuals is prohibited.

"Fortunately this is not the case where Portuguese Timor is concerned, foreigners of any nationality receiving every courtesy and every possible assistance from the Government.

"Petroleum has been known to exist in the Island for a long time, one of the earliest references appearing in Wallace's "Malay Archipelago," written over 50 years ago.

"There has been recently many large areas of petroliferous land located, and acting upon geological advice, deep boring is now in progress. A number of concessions are held by various companies, the largest single concession (Pualaca Concession) being situated in Central Timor; and other properties being either on or adjoining the south coast.

"Even at comparatively shallow depths good shows of petroleum have been met with, and considerable quantities obtained by pumping. When, however, drilling is carried down to a depth of from 1,200 to 1,500 feet, I confidently anticipate that good flowing wells will result.

"A sample of petroleum taken from the surface has proved to be of high commercial value, containing as much as 64.6 per cent. of kerosene and over 30 per cent. of intermediate lubricating oils. It is highly probable, therefore, that ultimately Timor petroleum will prove to be the most valuable obtained in the East Indies.

"The country is mountainous throughout, but is well served with roads which are being rapidly extended.

"Although within a few degrees of the equator, the climate in the interior is an ideal one for Europeans, enabling oilfield work to be carried on without jeopardising the health of employees.

"Labour conditions cannot fail to attract the notice of a new-comer, wages being exceedingly low (20 Mexican cents per day, or 5d. per diem, for unskilled labour), without recruiting or any other expense, all that is necessary being to notify the local military commandant the number required, and within a few days the men are all forthcoming.

"Beyond Customs charges and necessary licences, there is no taxation on either property or income.

"There is a small statistical tax of 1 per 1,000 on imported machinery, and a nominal royalty on all oil exported, but this is more than compensated by the rebate which is allowed on colonial products imported into Portugal.

"As regards the natives, it may be stated that the Timorese are more Papuan than Malayan, but their colour is somewhat lighter and they do not possess such prominent features.

"They are divided into many small tribes, are very warlike and speak a variety of languages, no less than forty-two dialects being known in Portuguese Timor alone.

"At the time of writing, four companies have secured concessions, and no less than three are carrying out active development. The first company to acquire territory was the Timor Development Syndicate, of Sydney, whose land is situated at Vessora, on the South coast. Acting upon the advice of its geologist, a deep bore is now being put down, and, if necessary, this well will go down to a depth of 2,000 feet.

"The only English company is the Timor Oilfields, Ltd. It is generally conceded that this company possesses not only the largest but also the most promising territory in the island, and under my direction all pioneer work has been carried out, everything being now in readiness for deep boring.

"The next company of importance is the International Petroleum Co., Ltd., of Hongkong, and the latest company to direct its attention to Timor is the Bibiluto Oil Wells, Ltd., of Sydney, which principal concessions are on the coast, some 15 miles west of Vessora, others being more in the interior.

"From the foregoing it will be observed that considerable interest is being centred in these newly-discovered fields, and their ultimate successful development is but a question of time."

Referring once more to the International Petroleum Co., Ltd., unfortunately the work had to be suspended owing to a rebellion of the natives, which now has been subdued by the Portuguese troops. There is no doubt that very successful results would have been achieved in a very short time, but for the interruption. All the indications show that the development of these Oilfields will yield the best results.

DREDGING MANILA HARBOUR

The new harbor dredge, recently purchased by the bureau of navigation from the China Navigation Company, Limited, has commenced work on dredging the inner harbor between and about the piers, reports a Manila paper, and continues:—Due to the lack of funds the dredge is only working one shift, but with a suction capacity of 1000 cubic yards an hour, the work should be accomplished in record time.

The inner harbor is to be dredged to a depth of 32 feet low tide, or two feet more than its present depth. This will give a depth of 37 feet at full high tide, a depth that would allow the mammoth freighter *Minnesota*, loaded to her capacity, as she was a few months ago with 20,000 tons of flour, to glide alongside pier two or three as do the many other freighters that make Manila a port of call.

Work at present is being carried on near piers two and three as the churning of vessels' screws has accumulated a great deal of mud near the piers, which is proving a menace to navigation. This will be removed and then the work of dredging the balance of the inner harbor will be accomplished.

After finishing the harbor work at Manila the dredge will proceed to Iloilo to deepen the harbor at that port.

THE JAPANESE IRON MARKET.

Importers of iron and iron materials in Japan are suffering from overstocking and consequent dulness. Already in Spring last symptoms of hard times were in evidence on the iron market, as a result of over-importation. Apparently as a precaution some of the importers in Tokyo and Osaka have refrained from placing fresh orders. Owing, however, to the increased arrival of goods covered by provincial importers not only have the stocks not diminished, but a considerable increase has taken place. Prices have consequently come down heavily while the demand has fallen off. As a rule the season of the greatest demand sets in the early part of October, but this year the usual early Autumn activity has been deferred almost indefinitely.

It is, however, believed by those in the trade that though there is small prospect of an early improvement, signs are not wanting of more or less recovery by next Spring provided the importers refrain from placing fresh orders in the meanwhile and try their utmost to dispose of the accumulated stocks.

ZINC REFINING IN JAPAN

Zinc veins are discovered everywhere in Japan, according to the *Osaka Mainichi*, and are almost inexhaustible. Moreover they are located in convenient places and can be worked with comparative ease. According to experts Japanese zinc ore is of a superior quality and contains 30 to 50 per cent. of pure zinc. Owing, however, to the absence of refining works in Japan it is almost all exported in the state of ore. In return Japan buys from Europe or America refined zinc, sheet or plate zinc and waste zinc to the amount of 4,000,000 yen yearly. Last year Kobe alone imported refined zinc to the amount of 5,730,000 kin, plate or sheet zinc amounting to 1,340,000 kin, and waste zinc to the amount of 2,730,000 kin. Several attempts have been made so far to start smelting works, but all have failed owing to the defects of Japanese made crucibles. Now the Mitsui Bishi firms are reported to have appeared on the field. The Mitsui firm has even gone as far as to start the construction of smelting works and a crucible factory at Miike. The Suzuki firm of Kobe has also decided to start smelting works and the building is now under construction at Wakinohama, Kobe.

RAILWAY ENGINEERING IN CHINA

The following address was given by Mr. A. C. Clear of the Shanghai-Nanking Railway at the inaugural meeting of the session of the Shanghai Engineering Society recently:—The chaotic state of China at the present moment, has called forth many pessimistic views of her future, but as from pessimism no progress can result, it becomes us as apostles of progress to banish this attitude of mind and find some ground for and spread a belief in our own optimistic views. It is a difficult task I admit, and therefore all the more congenial to engineers. The present day tendency is all towards speed, and unless our hopes are realized as quickly as we raise them, we are apt to view the delay with despondency. Revolutions in smaller and less conservative countries than China have taken years to settle, and there is no reason that we should expect quicker results here, except perhaps, that we are generally inclined to show more impatience in dealing with things Chinese than in other matters. It may not be uninteresting, although familiar, to most of us, briefly to review the history and developments of railways in China as one is apt to overlook what very recent innovations they are here.

The first attempt to obtain a railway concession was made in 1863, when a number of foreign merchants in Shanghai presented a petition to Li Hung-chang, then Governor of Kiangsu, for the right to construct a railway between Shanghai and Soochow. This was regarded as an attempt by the foreigners to obtain an undue amount of influence in the country and was accordingly refused. Numerous proposals were afterwards made, but no actual railway construction was attempted until 1876, when the Woosung Road was converted into a light railway of 2 feet 6 inches gauge and rails of 26 lb. per yard, the length of line being about nine miles. No authority having been obtained for this conversion, the presence of the railway was strongly resented by the officials, and the first opportunity was taken to get rid of it. This occurred when a Chinese was run over and killed some six months after the opening of the line to Kiangwan, popular feeling being worked upon to such an extent that riots were threatened. To avoid further trouble the line was closed upon instructions from the British Minister. It was reopened some months later, on December 1, 1876, upon the understanding that the Government take over the railway at cost price. The purchase was completed in October, 1877, and the line immediately after closed down, all permanent way material was taken up and, together with the engines and rolling stock shipped to Formosa. Its subsequent fate is well known to all of us.

The next attempt was made by Governor Ling, of Formosa, to obtain a railway there, as other means of communication were practically non-existent. In spite of repeated efforts he failed to move the Imperial Government from their policy of opposition to all that stood for progress, and gave up the attempt. At the conclusion of the Franco-Chinese War in 1885 (during which Taiwanfu, the capital of Formosa, had been bombarded by the French) the Imperial Government gave instructions for the capital to be moved inland to avoid any possible similar attack. The then Governor Liu, evidently impressed with the policy of his predecessor, pointed out the necessity of quick communication from the sea to the proposed inland capital, and finally obtained Imperial sanction to a railway. This line was built under extraordinary difficulties, one of the principal ones being the provision of military labour, the soldiers taking instructions only from their officers, ignoring completely the foreign engineers. Several very costly blunders resulted, and through continually neglecting the advice of the foreign engineers employed, a very unsatisfactory line was built.

The Kaiping coal fields were responsible for the next step in railway development. Originating in a tramway, it was the nucleus of the present northern system of railways. It came about in the following manner. Japanese coal only could be procured for the China Merchants' fleet. It was therefore considered desirable to develop the rich coal deposits of the Kaiping district. Imperial sanction was obtained after the usual difficulties, and the first shaft sunk in 1878. The nearest point to the sea being twenty-nine miles away, a railway was suggested, and after considerable delay, and strong objections on the score of disturbing the Fengshui of the district, sanction was accorded, but, before work was commenced, was withdrawn. Endeavours to sway the Imperial conscience to re-consent being fruitless, it was finally decided to abandon railway transport in favour of a canal. This scheme was, however, not feasible, and eventually sanction was given to construct a tramway, the motive power of which was to be mules.

The work was put in hand with Mr. C. W. Kinder as engineer in charge, and it is due to his persistency and realization of the importance of the subject, that the standard gauge of 4' 8½" was adopted. The result of his insistence on this point has saved China incalculable expense and trouble, as a smaller gauge, if then adopted, would have been insisted upon throughout the country to the general stultification of the carrying capacity of all her railways.

Mr. Kinder was not satisfied with the proposed motive power, and quietly started to build a locomotive from an old portable wind-engine. His efforts were discovered and official orders were promptly issued for the construction of the locomotive to be stopped. It was, however, unofficially completed and was in daily use until opposition was withdrawn and proper tank engines were allowed to be procured. This railway was eventually extended to Tientsin.

Beyond this little further in the way of railway development occurred until 1895. Up to this date, barely eighteen years ago, prejudice was so strong against railways that only by the utmost persistence were these small works accomplished. Popular approval and sympathy had not supported these progressive efforts. They were due to the powerful aid of Li Hung-chang (whose attitude towards railways had completely changed) and to that of a few merchants, who by their intercourse with foreigners in the Treaty Ports realized the advantage of progressive measures. It is, however, to this process of inserting the thin edge of the wedge that the realization of the necessity of railways in China is due to-day. All credit is due to the dogged perseverance of the engineers, who, in face of difficulties far greater than any natural ones, stood up against, and overcame the deep rooted prejudice of centuries.

Since the war between China and Japan in 1895, considerable progress in railways had been made; innumerable and familiar obstacles had been overcome, and there was a more general approval and desire for them than had hitherto been the case. China had now approximately 5,900 miles of railway opened, 2,200 miles under construction and some 8,500 projected, irrespective of Dr. Sun Yat-sen's proposals. Progress had been made in other directions. Towns were everywhere installing electric light, telephone systems were becoming a necessity; mills, factories, workshops were springing up in response to the advantages of quick, safe, and cheap transport. In fact the progress made during these last eighteen years, though not startling in amount of actual work done, is remarkable, considering the change wrought amongst the people that have come into contact with these evidences of modern civilization. The gradual utilization of railways must mean more tolerance of our Western methods. The man who once travels in a railway train can never really be the same

again; it must have some influence on his opinions. He must in the quiet of his own village compare the speed and comfort of travel by train, to the discomfort and tediousness of boat, wheelbarrow, or other antiquated means. Places that were once beyond his knowledge are now within easy reach, and he is put thus easily into more direct communication with a larger section of the world, and, consequently, his views are broadened.

As an instance of the new appreciation of western methods, it may be mentioned that over 20,000,000 passengers, and 16,000,000 tons of freight were carried on Chinese railways last year—excluding several railways for which statistics were not available. Another striking evidence of the change in public opinion, and one which struck at the very root of all the Chinese held in the deepest respect and reverence, was the yielding to the necessity for the removal, occasionally, of graves, in order that a railway might be properly constructed. An aversion to such removal in the early days gave to some of the lines the most extraordinary alignments. Of this, the Woosung line was a fair example. Even on this vital point the Chinese had lately sacrificed tradition to the needs of progress.

One great bar to progress—the maladministration of public funds—might be partially removed if the Government would give its officials salaries commensurate with their responsibilities and refrain from the periodic taxation of such salaries when in need of funds. It was to the foreign engineer that China must look for aid in railway and all other engineering works for some years to come; and foreign engineers must, by perseverance, square dealing, good and economical work, show that they were not altogether self-seeking but had the country's welfare at heart.

A factor of the first importance in the future development and maintenance of railways in China was the proper training of students, and in this connection a proper course of practical training for the future engineers of China was essential, and should be insisted upon. In no other country in the world are railway problems so intricate and difficult as in China. Her financial difficulties, international complications, Provincial opposition, intrigues of place seekers, etc., combine to render the task of the Minister of Communications anything but easy. The Provinces now generally are accustomed to the idea of railways and evidently require them, if their abortive and expensive attempts at procuring them can be taken as a guide.

The policy of the Government should go far to remove Provincial opposition, and an urgent necessity now was the preparation of standards up to which railways could be built and equipped. A Board of Foreign Engineers established at Peking with a wide scope of powers would remove many of the inconsistencies which now existed, and which in the near future, would involve considerable expenditure to bring up to a standard for the economical and safe working of the railway systems soon to be linked up over the whole country. Up to the present time those railways under the sole control of Chinese, almost without exception, had been allowed to depreciate to such an extent that heavy expenditure must be incurred to put them on a safe and sound footing. The railways of China now represented some \$400,000,000 worth of property.

In conclusion, there is need for careful geological survey for ascertaining the position, amount and quality of the mineral wealth of the country, and of guarding against indiscriminate granting of concessions which might ultimately mean great financial loss. Attention should also be given to the provision of a supply of a suitable timber, an important factor in railway construction and maintenance. Plantations might be started on spare land at the sides of the railways, so that timber would then be easily accessible for transport.

AGRICULTURAL PROGRESS IN THE PHILIPPINES.

The Agricultural Bank was organized in the Philippines in July, 1908, and was opened for business in the following October. It had a capital of a million pesos or half million American dollars. This bank established 24 agencies in the provincial capitals, where there were no commercial banks or branches, and of these, twelve were established during the last year.

This Agricultural Bank thus established under the auspices of the American insular government of the Philippines was not established to compete with commercial institutions, but to aid in the development of the country. One of the branches was closed as soon as the regular Filipino bank located a branch there, that is in Zamboanga. As the government is behind the Agricultural Banks, certified checks on the bank are good anywhere in the Philippines, and such use of the checks is rapidly supplanting the transportation of money for the payment of debts. In its report for the agricultural year of 1912-1913 the Bank reported existing loans to the amount of a million and three quarters of pesos, an increase of 800,000 pesos over the previous year. These loans were made in 390 different transactions, 131 of them based on royal grants at 10 per cent. and 259 on Torrens titles at 8 per cent. There have been reported but twenty delinquents, and eight of these were granted extensions. The Bank lost but 100 pesos during this period, and that was on a small loan of 300 pesos properly secured but on outlying property that brought less than the mortgage. The branches are authorized to take time and current deposits, giving 3 per cent. on six months for time deposits, 3½ per cent. on 12 months. No loans are made of any money either on time or current deposit. Time deposits are sent to the head office at Manila and placed with the commercial banks at the rates of interest paid by the Agricultural Bank.

This feature of the agricultural bank's work has only been in operation for three months, and 35,000 pesos have already been deposited on time and 200,000 on current account. The general success of the bank indicated greater possibilities, and an increase in its capital of another million pesos would have been desirable, but the conclusion reached was that the money was so much needed in other directions that the enlargement of the capital would not be made, at least at present. The whole line of procedure in the Philippines, including the educational institutions in the way of experiment farms and stations, suggests the broad general policy of higher agricultural attainment that has produced such wonderful results in the United States during the last few years, and all of which influences are now in full development in that country and a similar development is promised in the Philippines.

COTTON SPINNING IN JAPAN

An enormous amount of spinning and weaving machinery was ordered from Europe and America last year, says the *Asahi*, but the arrival of machinery ordered from England has been delayed on account of the strike at the factory of Mather, Platt & Co. As the result of an agreement among the employers, a uniform rate of wages is paid, while the working hours are fixed by the Factory Act. For this reason, says the *Asahi*, it is impossible for English manufacturers to pay their men extra money and extend their working hours, or to collect the desired number of skilled labourers in any one factory. The strike affected all the other works, and the shipments of all machinery ordered for Japanese buyers has been delayed. The machinery ordered this year has been contracted for arrival by the end of the first half of next year, but

in the present state of things in England, the delivery of all the machinery cannot be expected before the end of next year. Industrial business in Japan is depressed owing to the tightness of money, and manufacturers particularly are experiencing great difficulty in finding the necessary funds. If the machinery they have ordered should arrive by the time arranged, they would find it hard to pay for it, and consequently they are rather hoping for further delay. In these peculiar circumstances no trouble has arisen between importers and their clients on account of the delay in the arrival of the goods ordered, though, had such a delay occurred during a period of industrial activity, not a few complaints would have arisen.

ELECTRICAL ENTERPRISES IN JAPAN

Upon making inquiries into the condition of various electric enterprises in Japan, the *Chugai Shogyo Shimpō* remarks that at one time electric undertakings were considered to be very profitable, and capitalists were attracted to such enterprise just as ants swarm to sugar. As a result, electric works of various descriptions on a small scale have cropped up everywhere like mushrooms after a shower of rain. The failure of Mr. Saiga, of Osaka, who was regarded as the "electric king" of the Kwansai district, awakened the business public to a sense of the danger which threatened, and the amalgamation of various small electric companies in Kyushu has been brought about as a result. Enterprises like electrical concerns which tie up a tremendous amount of money, can be successfully conducted only when run on a large scale. The following result of the investigations made by the authorities in regard to the amount of capital invested and the return thereon will give an idea of the prospects of this branch of activity:—

Capital.		Number of Works.	Rates of Dividend.
Y. 50,000	and less.....	38	0.85
100,000	" ".....	32	0.74
500,000	" ".....	57	0.83
1,000,000	" ".....	17	0.90
5,000,000	" ".....	17	0.99
5,000,000	" ".....	3	1.03

Japan has claimed an indemnity of \$980,000 from China for the incidents at Nanking arising out of the recent rebellion.

PUBLICATIONS

"Gold Dredging" by T. C. Earl (published by Spons, London) is not a highly technical work but a concise summary of the main points of the industry with tables and references and excellent illustrations of operations in many countries. It is a book which should be in the hands of every investor in gold dredging shares and is a valuable addition to the list of mining literature.

Most of the practice described is Australian and New Zealand, as the author is evidently more familiar with conditions in those countries. New Zealand is the pioneer in this branch of mining, while California has perfected the large modern installations which are in keeping with the local conditions found there and in Alaska.

Gold dredging is a most satisfactory and safe form of mining, and when properly undertaken by experienced people it is most always successful.

The weathering and wearing away of the rocks containing gold bearing veins and the carrying down and concentrating of the gold in river valleys and at the mouths of streams is a process of nature which is a most interest-

ing one and where the gold is found so deep and under conditions where it cannot be won by others means, the dredge fulfils its mission and is designed to meet local conditions. Gold dredgers are now scattered over the world in many places and while there have been failures, in the majority of cases profits have resulted. By carefully testing the ground and weighing the conditions prevalent, estimates can be made very closely in advance so that dredging investments are removed beyond the speculative point.

With all the attention that is now being paid to gold and tin dredging it is quite noticeable that no such enterprises are found in China and though there are known areas where dredging for both metals would undoubtedly be profitable, the attitude of China towards any such modern development of her resources hitherto adopted precluded any possibility of anything being done.

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RUSSO-JAPANESE RAILWAY CONNEXION.

The inauguration from January 1 of a combined freight service between the Japanese and Russian railways, remarks the *Osaka Mainichi*, will be followed by the opening of a direct service to Moscow for the transport of two or three certain classes of Japanese goods. Negotiations are now in progress for this purpose. The direct service will be first opened for raw silk and tea. Freight accommodation will be gradually improved after the working of the new service has been tested by actual working, and the list of goods transported direct between Moscow and Japan will be increased. When this arrangement is put into operation, Japanese raw silk and tea sent to Europe will be distributed through Moscow, which is expected to become an important distributing centre. Russian merchants there are already making preparations to meet the anticipated requirements of the circumstances.

THE CHEKIANG RAILWAY.

The shareholders of the Soochow Railway Company (Shanghai-Kashing line) have, in view of the continued bad business of the company, signed an agreement with the Ministry of Communications to sell the line to the Government. On account of the stringency of Government funds, the Ministry promised to pay the amount by instalments. This has met the approval of the shareholders. But a difficulty has now arisen. When Chen Chi-mei was Tutuh of Shanghai, he negotiated a loan from a Japanese firm, giving as security the above line. The loan agreement stipulated that if the loan be repaid before maturity a compensation of \$150,000 should be paid to the firm. The Ministry on learning of this has asked the shareholders to settle this question among themselves.

IRON IN KOREA

A Chinnampo paper, quoted by the *Seoul Press*, states that the export of iron ore through that port from mines in Whanghai Province has been very active this year. Up to December 15, 135,263 tons were exported, already showing an increase of more than 3,000 tons as compared with the total amount exported during last year. Of the figures 44,000 tons came from Eunyu, 46,500 tons from Chailyong, 34,183 from Anak and 10,500 tons from Sinchon.

FAR EASTERN RAILWAYS

CHINA

Railways in China.—A Japanese paper reports that the entire length of the Government railways in China is 2,493 miles. The mileage of the different railway lines and the year of completion of the construction work are as given below:

Railway Lines	Mileage	Year of completion
Peking-Mukden....	252	1903
Daokao-Kyonghuai.	96	1904
Peking-Hankow....	814	1901
Tayuan-Shih-kiakai	151	1907
Huchou-Ningpo....	210	1908
Kaifeng-Honan....	140	1908
Peking-Cheng-kai kou.....	124	1909
Tientsin-Pukow....	626	1911
Kirin-Changchu....	80	1912

Total..... 2,493

Besides the above lines, there are some extending over 2,389 miles owned by foreign companies, and others extending over 351 miles run under the management of the provinces. Thus the total mileage of the railway lines both private and public throughout China is 5,233 miles.

Shanghai-Nanking Railway.—The following figures of traffic returns (approximately) for the week ended November 15 are issued by the Shanghai-Nanking Railway:—

Year.	Passengers.	Goods and Sundries	Total for the week.
	\$	\$	\$
1913....	52,360	12,127	64,487
1912....	43,042	10,108	53,150
Increase.	9,318	2,019	11,337
Decrease	—	—	—

For forty-five weeks.

Year.	Passengers.	Goods and Sundries	Total
	\$	\$	\$
1913....	2,121,060	454,252	2,575,312
1912....	1,975,703	358,459	2,334,162
Increase.	145,357	95,793	241,150
Decrease	—	—	—

Week ended November 22.

Year.	Passengers.	Goods and Sundries.	Total for the week.
	\$	\$	\$
1913....	54,120	14,082	68,202
1912....	43,583	10,706	53,889
Increase	10,537	3,776	14,313
Decrease	—	—	—

For forty-six weeks.

Year.	Passengers.	Goods and Sundries	Total
	\$	\$	\$
1913....	2,175,180	468,334	2,643,514
1912....	2,019,286	368,765	2,388,051
Increase.	155,894	99,569	255,463
Decrease	—	—	—

Week ended November 29.

Year.	Passengers.	Goods and Sundries	Total for the week.
	\$	\$	\$
1913....	47,959	12,363	60,322
1912....	45,125	7,566	52,718
Increase.	2,807	4,797	7,604
Decrease	—	—	—

For forty-seven weeks.

Year.	Passengers.	Goods and Sundries.	Total.
	\$	\$	\$
1913....	2,223,139	480,697	2,703,836
1912....	2,064,438	376,331	2,440,769
Increase.	158,701	104,366	263,067
Decrease	—	—	—

Week ended December 6.

Year.	Passengers.	Goods and Sundries.	Total for the week.
	\$	\$	\$
1913....	50,911	11,666	62,577
1912....	43,153	10,567	53,720
Increase.	7,758	1,099	8,857
Decrease	—	—	—

For forty-eight weeks.

Year.	Passengers.	Goods and Sundries	Total
1913....	2,274,050	492,363	2,766,413
1912....	2,107,591	386,898	2,494,489
Increase.	166,459	105,465	271,924
Decrease	—	—	—

The Hailan Railway.—The work on the Hailan Railway will soon begin in earnest. Director Sze has appointed Messrs. Chang Tah and Wang Chieh-yuan to be Vice-Chiefs of the Eastern and Western Divisions, respectively.

Kiangsu Railway.—At a meeting of the shareholders of the Kiangsu Railway, held at Shanghai, it was decided that the railway should be transferred under State management and that the capital of the shareholders should be repaid by the Government in five years.

The Tientsin-Pukow Line.—Through booking of tickets between the principal stations on the Shantung Railway and the Tientsin-Pukow Railway was commenced from December 15 last.

American Section of Hukuang Line.—It is hoped that the survey of the route to be followed by the American section of the Hankow-Szechuan railway will be concluded before July next. Mr. Randolph, who has been in charge of the engineering work since the departure of Mr. Beckwith, has made a reconnaissance of a route different from that surveyed for the Szechuan Railway Company. The Chinese line was about 100 miles in length, as against 60 to 65 proposed by Mr. Randolph. From Nau-to-chi to Kweichow in Hupeh, the distance is about 40 miles, and the line should be properly surveyed by January. There will probably be about 12,000 feet to 15,000 feet of tunnels with numerous small bridges, but the section will not be so difficult as that lying between Ichang and Nau-to-chi. In this section there will be about 22,000 feet of tunnels and about 300 feet of bridges.

JAPAN

Nagareyama Railway Co.—All the shares in this company have been taken up. The company proposes to build a light railway, 5.50 miles in length, connecting Umahashi station on the coast line of the Government railways and the Tone Canal via Kogane, and Nagareyama, important industrial towns in Chiba prefecture, with a capital of 100,000 yen. It is expected the whole line will be completed by April next year.

Tokyo Central Station.—The Central Station, now nearing its completion, will be the largest, as well as the most magnificent, in the Orient. The work was begun about six years ago, and the Station will be finished and ready for actual service in July 1914. The estimated cost of the whole building is 2,500,000 yen. In its elaborate architectural plan and modern equipment for the comfort, safety and convenience of passengers, the Station challenges any other building of similar size in the world to-day.

The whole building is of steel frame and reinforced concrete, brick facing, fire proof, and three stories high. The Station proper is 184 ken in length and from 11 ken to 22 ken in width, and covers an area of 2,341 tsubo.

The ground floor is entirely used for passenger traffic; there are ticket offices, waiting rooms for 1st, 2nd and 3rd class passengers, a special waiting room for women, a dining hall, and baggage rooms. In the adjoining building in the rear, toilet rooms, lavatories, a public telephone booth, telegraph office and news stand will be provided; one broad passage is made exclusively for out-going passengers.

The special entrance is provided for the use of the Imperial household. The sitting room, waiting room, reception room and auxiliary rooms will be decorated with the finest work of art; at present, brilliant marble walls are receiving the finishing touch. Wagons and other vehicles with baggage can reach the train directly through a part of the building. The basement is divided into two sections; one used for the boiler rooms from where steamheat will warm the entire building in winter; the other is for kitchens. Except three large dining rooms and several adjoining rooms at the south wing on the 2nd floor, the rest of the 2nd and 3rd floors will be used for railway business offices.

The building is furnished with electric light; has three elevators and 11 hydrants around the building. The spacious ground facing the front of Station will be turned into beautiful squares.

Railway Extension Funds.—With reference to the Railway Budget estimates for the coming fiscal year, Mr. Morimoto, Chief of the Accounts Bureau in the Imperial Railway Board, states that the total railway Budget estimates aggregate somewhere near 122,000,000 yen. Of this 61,400,000 yen is for business expenditure, 1,000,000 yen for subsidies to the light railway construction, 500,000 yen for special reserve, and 4,000,000 for payment of advances from the Deposits Bureau. It is true that the Railway Board has repeatedly conferred with the Finance Department authorities with a view to obtaining advances, but nothing definite is yet decided. Accordingly the amount of the advance is still unsettled, although it appears that an agreement will be concluded for a loan of some 37,500,000 yen. The authorities are rather doubtful as to the advisability of laying a railway extension scheme spread over a period of seven years as advocated in some sections by the public. The Railway Board, however, is desirous to obtain at least 42,000,000 yen required for railway extension and improvement.

New Light Railways.—The Railway Board has given a charter to the Shimotsui Light Railway Company for the construction of a line, 4 miles in length, connecting Chaya with Kurashiki, Tsukubogun, Okayama prefecture.

A charter has also been granted to the Moji Chikko Railway Company promoted by Mr. Kawano Naotaro and others for the construction of a steam light railway, 11 miles and 20 chains in length connecting Tanoura, Moji, with Sone village, Kikugun, Fukuoka prefecture, with a capital of 630,000 yen.

A charter has been given to the Kominato Railway Company for the construction of a light railway, 31 miles and 50 chains in length, connecting Goi, Ichihara-gun, with Mina village, Awa-gun, Chiba prefecture.

The Kibitsu Light Railway Company has also obtained a charter for laying a light railway, 2 miles and 40 chains in length, between Magane village and Niwase in Kibitsu, Okayama prefecture.

The Makio Railway Company promoted by Mr. Nagao Uchichi and several others with a capital of 500,000 yen has obtained a charter for the construction of a light railway, 11 miles and 48 chains in length, connecting Hamadera and Yokoyama village in Synhoku-gun, Osaka fu.

MANCHURIA

South Manchuria Railway.—The traffic earnings for the month of November amounted to Y2,100,003, being an increase by Y280,973 over the corresponding month of last year. The aggregate earnings for the eight months since last April reached Y13,278,700, being an increase by Y3,065,200 on the corresponding period of last year. During November the freight receipts of the Railway alone amounted to Y1,033,953.

The *Manchuria Daily News* is informed that the S. M. R. Co.'s estimates for the next fiscal year include about Y13,400,000 for capital expenditure, about Y42,000,000 for receipts, and about Y37,000,000 for expenditure, leaving for the net profit the balance of about Y5,000,000. Compared with the estimates for the current fiscal year, a decrease of about Y700,000 is observed in the capital expenditure and an increase of about Y4,000,000 in each of the receipts and expenditure. Details of the estimates are given elsewhere.

The same paper says:—Opinions vary on the question of raising the rate of dividend of the S. M. R. Co. by 1 or 2 per cent. per annum. Those who are against raising the rate say that the Company's net profit is only Y5,000,000 per annum at present. The old shares of Y20,000,000, of which Y16,000,000 has already been called up, added to the new shares of Y40,000,000 recently subscribed to, of which only the first instalment of 10 per cent. has been called, make the private capital invested in the Company Y60,000,000, apart from the Government shares of Y100,000,000, which is the appraised value of the old narrow gauge railways, buildings, the Railway Area, etc., as handed over to the Company on March 31st, 1907. When all the aggregate capital of Y160,000,000 is to receive the dividend at the present rate, the total amount required therefor will reach Y9,600,000, which is nearly double the present net profit.

Supingkai-Taonanfu Railway.—The report that the construction of the Supingkai-Taonanfu Railway will probably be commenced on the return of spring has spread along the country through which the railway in project is supposed to pass. The more enterprising Chinese are buying lands which they think will be selected as the sites of railway stations. In consequence, the price of lands along the proposed railway route has risen, and with it the house-rents have also been raised. The surveys for the line are to be completed during this winter, and the construction work will be started on the return of spring. Mr. Sun Pao-chen, ex-Director of the defunct Board of Foreign Interchange, is mentioned as candidate for the Directorship of the new Railway.

Kirin-Changchun Railway.—A new station was opened at Kutien between Huapichang and Chiuchan on the Kirin-Changchun Railway on December 10. The country about the new station is a fertile bean zone, and the producers there felt great inconvenience because of the lack of railway facility, both Huapichang and Chiuchan being situate a good distance away.

Penchihu-Niuhsintai Light Line.—The project of laying a light-rail line between Penchihu and Niuhsintai passed the Provincial Assembly and the franchise was granted to Chairman Chin of the Penchihu Prefectural Assembly. Work was commenced about two months and a half ago. The promoters had some difficulties with inhabitants regarding the purchase of lands for right of way, but these difficulties were soon amicably terminated. The line is expected to be completed about January 20.

The line starts on the left bank of the River Taitzu near the Railway Bridge at the east of Penchihu, and is fourteen miles long. The estimated cost is about Y180,000. The pro-

motors have in plan the ultimate extension of the line to Chienchang, but this scheme is encumbered with sundry obstacles, and its accomplishment is accepted as a difficult task. At all events the completion of this line will quicken the operation of the colliery at Niuhsintai and at the same time boom Penchihu.

MALAYA

Penang Hill Railway.—The Railway commences at a point about 800 yards from the junction of Ayer Etam and Government Hill Roads and ends on the South side of the spur on which "Strawberry" bungalow now stands. The two end stations are at levels of 115 feet and 2,387 feet, respectively, above mean sea level, giving a total lift of 2,272 feet in a distance of 1 mile 433 yards and a mean gradient of 1 in 27.

It will be constructed in two independent sections, and all traffic will be transferred at an intermediate station, at an elevation of about 1,150 feet. The division into two sections has been necessary owing to the peculiar configuration of the hill, and the desire of obtaining a line economical to work combined with moderate capital cost.

Two carriages will be used on each section attached to either end of a steel wire cable. They will leave and arrive at the stations simultaneously and pass each other at the middle of the section. Each carriage will hold about forty passengers, and when working to its full capacity the line will be capable of dealing with over 3,000 passengers daily. Provision will be made for the conveyance of heavy building materials. The winding machinery will be driven by electricity supplied from the Municipal Electrical Power Station.

The line should be open for traffic towards the end of 1915.

THE PHILIPPINES

Manila E. R. and L. Co.—The Manila Electric Railroad and Light Co. are increasing the capacity of their Manila station by the addition of a 2,500 K.W. Allis-Chalmers turbo-generator, bringing up the total output of the plant to 9,250 K.W. 2-phase at a pressure of 3,600 volts. The additional steam power required is being met by the erection of a further battery of two Babcock and Wilcox water tube steam boilers each of 400 H.P. (@ 34½ lbs. evaporation) at a pressure of 180/200 lbs. to the square inch, superheated by 100/120 deg. Fahr. The condensing plant for the set is of the Alberger Surface condensing type of 7,000 sq. feet cooling surface, with steam driven air and circulating pumps. A turbine driven hotwell pump is also being installed.

A Westinghouse motor generator set for the railway power is also being added. This set is of 1,000 K.W., the motor end being connected to a synchronous generator of 600 volts d.c.

The work of erecting these additions under the direction of B. H. Blaisdell, chief engineer, is now proceeding and it was hoped to have the motor generator set running when the increased demand for power was made during the Christmas holidays and the turbo set in time for the Manila Carnival and Philippine Exhibition, which will both be held in early February.

Manila Railroad Company.—The *Manila Daily Bulletin* reports that this company is determined to proceed with the line ending at Baguio, in spite of the assertion that the Aringay-Baguio extension was to be abandoned. Our contemporary proceeds:—Already eighty per cent. of the grading from Aringay to Baguio has been accomplished. Nine kilometers of railroad are laid out of Aringay and the construction will continue. The completion of the line to Baguio, it is estimated, will be in 1915.

Although the abandonment of Baguio as a government summer capital will be a temporary setback, the officials believe that with an increasing knowledge of the mountain city nothing can permanently prevent its growth.

GENERAL

Western Amur Railway.—The *Dalakaya Okraina* report:—Traffic has been opened on a part of the Western Amur Railway, and regular goods and passenger trains have been running between the station, Kuenga of the Transbaikial Railway and Kerak of the Western Amur Railway, which is a distance of 779 versts, since the 15th/28th October. The railway will be extended to Blagovyehtchensk, which means an additional 580 versts, so that the distance will be in all 1,359 versts. In January it is expected to run trains between Tchita and Blagovyehtchensk in three days.

TRAMWAYS

Shanghai Tramways.—The following is the traffic return of the Shanghai Tramways (Foreign Settlement) for the month of November, 1913, and for eleven months ended November 30, 1913, with figures for corresponding periods last year:—

	Nov. 1913.	Nov. 1912.
Effective receipts	\$ 79,266.42	\$ 68,893.58
Passengers carried	4,147,254	3,512,793
Car miles run	246,413	226,387
Loss by depreciation of subsidiary coinage	21,663.88	19,330.82
Percentage of loss by depreciation of subsidiary coinage	22.66	23.29
	11 months ended Nov. 30, 1913	11 months ended Nov. 30, 1912.
	\$	\$
Effective receipts	842,339.66	730,929.98
Passengers carried	43,566,754	37,385,171
Car miles run	2,632,640	2,521,922
Loss by depreciation of subsidiary coinage	236,414.57	221,271.43
Percentage of loss by depreciation of subsidiary coinage	23.14	24.72
Week ended November 19, 1913.	1913.	1912.
	\$	\$
Effective receipts (after deducting loss by depreciation of subsidiary coinage) 18,888.77	16,174.51	
Passengers carried	983,811	823,813
Car miles run	57,425	53,544

The loss by depreciation of subsidiary coinage for the week was \$5,089.20, equal to 22.38 per cent. of the gross cash collected on the cars as compared with \$4,537.11, equal to 23.29 per cent. for the corresponding week last year.

Week ended November 26.	1913.	1912.
Effective receipts (after deducting loss by depreciation of subsidiary coinage)	18,188.30	16,070.65
Passengers carried	950,600	817,549
Car miles run	57,701	53,565

The loss by depreciation of subsidiary coinage for the week was \$4,972.39, equal to 22.60 per cent. of the gross cash collected on the cars as compared with \$4,440.24, equal to 23.04 per cent. for the corresponding week last year.

Week ended December 3.	1913.	1912.
Effective receipts (after deducting loss by depreciation of subsidiary coinage)	17,523.66	15,814.64
Passengers carried	921,408	803,197
Car miles run	56,050	52,904

The loss by depreciation of subsidiary coinage for the week was \$4,936.04, equal to 23.23 per cent. of the gross cash collected on the cars as compared with \$4,375.31, equal to 23.04 per cent. for the corresponding week last year.

Week ended December 10.

	1913.	1912.
	\$	\$
Effective receipts (after deducting loss by depreciation of subsidiary coinage)	18,335.48	15,900.60
Passengers carried	963,545	805,846
Car miles run	57,054	52,635

The loss by depreciation of subsidiary coinage for the week was \$5,208.73, equal to 23.32 per cent. of the gross cash collected on the cars as compared with \$4,353.71, equal to 22.82 per cent. for the corresponding week last year.

OIL

Alleged Concession in Shensi.—It has been reported in some of the Chinese papers that certain petroleum concessions in Shensi have been or are to be made to the Sino-Corporation.

CEMENT

Hupei Cement Works.—According to the Chinese Press these works are still in the hands of the Japanese mortgagees. Two of the three foreign employees are reported to have left. It is reported that the company has been negotiating with German firms in the hope of raising a loan to pay off the debt to the Japanese and to recommence operations at the Works, but it has been found impossible hitherto to arrive at terms.

However, according to a statement obtained at the Hankow office of the Hupei Cement Works, the company still has hopes of saving the works from falling into the hands of the Japanese mortgagees. The *Central China Post* is informed that the bankers from Kirin, have actually landed Tls. 300,000 in Hankow to redeem a part of the debt on the Works. However, the money has not yet been handed to the cement company. The Kirin financiers insist on having a clear statement of the finances of the company before advancing the cash, but the company has the curious idea that it should get the cash before giving the statement.

There the matter stands at present, and the Works meanwhile remain closed.

PUBLIC WORKS

Hongkong Public Works.—The programme of Public Works Extraordinary reaches the unprecedented total of \$2,130,800, said the acting Governor of Hongkong in his Budget Speech on Oct. 9. The nearest approximation to this amount was in 1905, when a sum of \$1,815,300 was provided in the Estimates for Public Works Extraordinary. Then, as now, there were several large works in progress which absorbed substantial sums. I may point out that the sums provided for the Tytam Tuk Waterworks Scheme and the Typhoon Refuge alone are \$1,040,000, or practically half the total amount, whilst the Wireless Station absorbs another \$100,000.

Reclamation Work at Hsiaokangtzu.—The application of the S. M. R. Co., to have the commencement of the reclamation work along the shore front of Hsiaokangtzu postponed till the end of 1915 has been sanctioned by the Kwantung Government. The Company's plan is to lay out about Y1,000,000 over three consecutive years.

SHIPBUILDING

Despatch Boat for Philippines.—The Chief Quartermaster of the Philippine Government is advertising for the building of a steamer for use as an express passenger and despatch boat. April 10, 1914, is the limit for receiving proposals, which must carry a guarantee of Pesos 20,000. A twin steamer is proposed to do from 16 to 22 knots an hour.

Encouragement of Ship Building.—The *Asahi* quotes the authorities of the Japanese Communications Department as follows on the effect of the encouragement of shipbuilding in Japan:—Before the adoption of the Shipbuilding Encouragement Law in October 1896, the shipbuilding industry in Japan was in a very primitive state, as may be seen from the fact that in 1883 one wooden steamer of 1,410 tons was built, in 1891, one steel steamer of 700 tons, and in 1895 one steel steamer of 1,502 tons; all the steamers which were then required being imported from abroad. Since the adoption of the Law the industry has made rapid progress, and up to the end of last year about 110 steamers, with an aggregate tonnage of 334,345 tons, had been built with the subsidy granted under that Law; the total amount of subsidies granted being Y7,527,923. In Europe and America privileges and protection in various forms are still being given to the industry, and it is therefore necessary in insular Japan to extend increased protection and encouragement to the industry.

A Slump Foreshadowed.—The *Mainichi* reports that with the usual slackening of trade in the summer the demand for freights has declined. This has in turn affected negotiations for the purchase of steamers. Of seven steamers, which have been purchased by Japanese, but have not yet been delivered, it is probable that the orders for three or four will be cancelled and the bargain-money forfeited. Coal freights from Moji to Yokohama, the standard rate of the coasting trade, have declined to 70 sen per ton, and shippers are wanting even at that rate. It is feared that the marine transport business will experience a bad slump in the autumn.

Shanghai Dock and Engineering Co.—The American transport str. *Liscum*, which sank about twelve months ago in the dock of the Shanghai Dock and Engineering Company is again afloat. With great difficulty and much skill she was refloated, internal fittings were replaced, and on October 8 she proceeded for a trial trip. Shortly after noon the vessel left the Old Dock with the officers and their friends. In every respect the trial was satisfactory, and the trip also served to fix up the compasses. The ship went as far as the Light Ship, some considerable distance beyond Woosung and returned towards seven o'clock. The working of the engines and of all details of the transport are described as excellent. The vessel is thirty years old, and this is the second occasion that she has been in the hands of the Dock Co. She was rebuilt in 1903 when the whole of the wood work, decks, and fitting were replaced. The success of the trial trip should more than assure her of many years service to the American Government.

FINANCIAL

Banque Belge Pour L'Etranger.—The report to June last shows the net profit balance amounts to Frs. 1,483,270, and permits the repetition of the dividend of 5 per cent., or Frs. 25 per share, and the allocation of Frs. 500,000 to the special reserve.

The general meeting was held on November 19. The balance-sheet was approved, and the dividend will be payable from December 1. In the report it is stated: "The branches give

full satisfaction. China has suffered the inevitable effects of a sudden change of régime, but the high qualities of the new President have given him the necessary authority to lead the new China in the way of progress. The bank has participated in several financial operations made by the Chinese Government, chiefly that of the Re-organization Loan. Further, some important industrial transactions have recently been made in Belgium, which will attract an influential clientele. The commercial position is healthy and money plentiful. Despite the crisis, our Tientsin branch has made good progress, and that of Cairo has also given encouraging results."

It may be remembered that the extraordinary general meeting held March 13 last, when the name of the bank was altered from Bank Sino-Belge, it was decided to increase the capital from Frs. 15,000,000 to Frs. 50,000,000. This increase was partially accomplished in June last by the issue of 3,000 shares of Frs. 500, which brought the issued capital up to Frs. 30,000,000. One advance that has been made is to acquire, on favourable terms, the Anglo-Foreign Banking Company, Limited, established in London since 1872.

Tokyo Short Term Loan.—The Tokyo Aldermanic Assembly recently gave approval to the contract for a loan of 3,720,000 yen between Mayor Baron Sakatani and Mr. Shidate, representative of a syndicate of five banks, the Industrial Bank of Japan, 1st, 25th, Mitsui and Mitsu Bishi. The loan is to be used in paying interest on the Municipality's existing debt, and of the total amount, 1,310,000 yen was to be paid in at once, 310,000 yen on the 2nd of Dec., 100,000 yen on the 20th of January 1914, 600,000 yen on the 8th of February, 600,000 yen on the 23rd of the same month, 240,000 yen on the 20th of March, and the balance, 580,000 yen, later. The rate of interest is to be fixed at that prevalent in the days fixed for payments of the instalments, that for the first instalment being 2 sen 2 rin daily per 100 yen. Each instalment is to be paid over in the form of three months promissory notes. The loan is to be redeemed through the issue of a municipal loan some time in the first half of 1914.

Alleged Szechuan Loan.—A telegram from Chengtu states that the loan negotiations between the Governor of Szechuan and a French bank have been brought to an amicable termination, and instructions from the Peking Government are now awaited.

The loan amounts from ten to twenty million taels and is at Taels 92 net with 5 per cent. interest, redeemable in the course of 20 years, being secured with the oil and cubic measure taxes.

The loan is to be appropriated for the redemption of war notes.

Hupei Cement Works.—It is reported that the Premier, Hsiung Hsi-ling, has sanctioned an agreement concluded between the Hupei Cement Works company and the Tientsin-Paochang Bank (a Chino-French commercial bank with offices in Peking and Tientsin) for a loan of Tls. 1,400,000 at 8 per cent. interest for a period of twenty years.

The net yield of the loan is to be 91 per cent. The lender is to get 3 per cent. commission on all sales to the company's cement. Interest is to be paid half-yearly.

The sum of Tls. 1,001,000 net is to be paid immediately by the lending bank for the repayment of the company's Japanese and Chinese creditors, while the remainder will be reserved for working expenses. All the company's buildings, godowns and other properties are pledged as security. If the loan cannot be repaid within twenty years as stipulated, an extension of five years is to be allowed.

The amount of loan money remaining for the resumption of operations at the Works will be Tls. 273,000.

Foreign Loan for Kawasaki Dockyard.—The *Japan Chronicle* learns that the Kawasaki Dockyard Company, Kobe, has successfully negotiated a loan of ¥1,000,000 from the London and Midland Bank for the redemption of the outstanding loan. The money was received on December 3. The term of the loan is said to be one year on a note, which is renewable every four months. The interest receivable by the foreign banks which have advanced money is said to be 5 per cent, but as the Specie Bank, which served as intermediary, and the Naniwa Bank, which guarantees repayment, are to receive a fee of 2 per cent., the total rate of interest will be 7 per cent., which is charged for the first four months. Thereafter interest will be charged at the current bank-rate.

The Dockyard is also in receipt of ¥1,360,000 that was owing by the Chinese Government, namely, ¥360,000, the balance due on a gunboat built at a cost of ¥750,000, and ¥1,000,000 for other munitions of war. These notes are payable on December 30th and January 30th next.

Kobe Water-Works Loan.—In accordance with previous arrangements the Kobe Municipal Assembly held a meeting recently to discuss the proposed issue of waterworks debentures. Forty members were present. For some reason, the question was discussed *in camera*. At 12.30, the hall was opened to the public and a resolution was adopted to the effect that the amount of ¥1,700,000 should be raised at the interest rate of 6 per cent. per annum, the issue price being ¥95. No repayment shall be made in the first three years, and the whole amount is to be paid off in the following thirteen years. The meeting was closed at 1 o'clock in the afternoon.

In this connection it is said, reports the *Asahi*, that although the issue price is 95, the net amount to be received by the City Office will be only ¥90.50 per ¥100. The Mitsui Bank which has taken up the issue, will keep ¥700,000, offering the balance for public subscription.

Toyo Kisen Kaisha Debentures.—On October 10th the Toyo Kisen Kaisha placed two million yen worth of 8 per cent. debentures on the market, and at noon the following day they had been oversubscribed by 700,000 yen. In this connection the *Chugai Shogyo* says that considering the smallness of the amount to be raised and the comparatively high interest offered at any other time it would not be surprising to find the debentures meeting with a good reception, but at the present moment, when money is tightening and negotiable papers are completely out of demand, it is surely phenomenal that they should have commanded such a ready market. In some quarters it is regarded as foreshadowing some change in the money market. As a matter of fact the banks and investors are suffering from overflowing purses as a consequence of the heavy decrease in the demand for money due to the general depression, and are at a loss as to where they can invest their funds with comparative safety. Therefore the issue of the debentures met with a ready response.

COMPANIES

Kishimoto Steamship Co.—The net profit of the Kishimoto Steamship Company, of Osaka, for the last half year just closed, amounted to ¥20,884, which brings up the total to ¥22,483, including a surplus brought over. This sum has been disposed of as follows:—
Reserve... ¥1,500
Bonuses to the officials... 1,900
Dividend, 10% per annum... 10,000
Carried forward... 9,594

Hoden (Japan) Petroleum Company.—The net profit of the company for the half year is put down at ¥1,414,591, and the proposed rate of dividend is 18 per cent. per annum.

Goto (Japan) Woollen Factory Co.—At the general meeting of this Company the following proposal for the disposal of the term's profits was passed:—

	Yen.
Net profits for the term ...	118,904,381
Brought over from last account	10,763,216
Total ...	129,667,597
This amount was disposed of in the following manner:—	
Legal reserve...	6,000,000
Depreciation reserve ...	10,000,000
Sinking fund for fixed capital...	5,000,000
Bonuses for directors and auditors...	5,000,000
Compensation disbursements ...	1,000,000
Dividends at 10 per cent ...	82,500,000
Carried forward to next account...	20,079,000

Japan Tannery Co.—At the general meeting of this company the following proposal for the distribution of the profits was passed:—

	Yen.
Net profits for the term ...	179,024,472
Brought over from last account	66,661,043
Total ...	245,685,515
This latter amount was disposed of in the following manner:—	
Legal reserve ...	10,000,000
Sinking fund for fixed capital	15,000,000
Secondary reserve ...	15,000,000
Bonuses for directors and auditors and social expenses...	12,500,000
Dividends at 10 per cent. ...	125,000,000
Carried forward to next account	67,585,515

Meiji Tannery Co.—This Company held its general meeting recently when the following proposal for the distribution of profits was passed:—

	Yen.
Gross earnings ...	40,930,110
Gross expenditure ...	24,017,919
Balance ...	16,912,191
Depreciation in the Company's assets ...	1,000,000
Balance ...	15,912,191
Brought over from last account	1,982,237
Total ...	17,894,428
This latter amount was distributed in the following manner:—	
Legal reserve...	900,000
Bonuses for directors and auditors	900,000
Dividend at 7 per cent. ...	14,000,000
Carried forward to next account	2,194,428

Shimabara Gas Co.—The Shimabara Gas Company, promoted by business men of that city, has completed the placing of its shares and will shortly begin the work of constructing the gas works. The capital stock of the company is 100,000 yen, divided into 2,000 shares, of which 900 were taken up by the promoters and the balance subscribed by the public. The Company is being aided by advice from the Kyushu Gas Company.

It was originally planned to remove the Kosone Gas plant of the Kyushu Gas Company to Shimabara, but owing to the increased demand for gas in the city of Nagasaki, especially from the Mitsu Bishi Company's Dockyard and Engine Works, it has been found impracticable to remove the Kosone plant to Shimabara, and the Shimabara Gas Company will buy a completely new plant. The expense of establishing the central plant is estimated at 70,000 yen.

Meiji Sugar Co.—At the general meeting of the Meiji Sugar Manufacturing Company the profits for the term, which, with the sum brought over from last account and that transferred from the dividend equalisation fund, amounted to 627,358,814 yen were distributed in the following manner:—

	yen.
Legal reserve ...	30,000,000
Fees for directors and auditors	30,000,000
Dividend at 12 per cent. ...	419,250,000
Carried forward to next account	76,108,814

Shinagawa White Brick Co.—At the semi-annual general meeting of this Company the following proposal for the distribution of profits was passed:—

	yen.
Gross earnings for the term ...	440,963.41
Gross disbursements for the term	355,511.43
Depreciation in the company's property. ...	13,000.00
Balance (net profits for the term)	72,451.98
Brought over from last account...	4,087.32
Total ...	76,539.31
This amount was disposed of in the following manner:—	
Legal reserve ...	5,000.00
Bonuses for directors and auditors	5,000.00
Dividend at 10 per cent. per annum	56,250.00
Carried forward to next account...	10,289.31

Hongkong and South China Steam Fisheries Co., Ltd.—The following report and statement of accounts have been issued to shareholders in this Company for the financial year ending 30th June, 1913:—

In pursuance of the special resolution passed at the extraordinary general meeting held on 20th October, 1912, the *Hoi Fung* was despatched early in November from Shanghai to Nagasaki, where a subsidiary Company known as the Nisshin Gogyo Kabushiki Kaisha was formed with a nominal capital of Yen 150,000 of which Yen 105,000 was paid up.

After undergoing a complete overhaul, and successfully passing the necessary Japanese Government surveys, the *Hoi Fung* was transferred to the Japanese flag and renamed the *Kaiho Maru*.

The preliminary expenses in connection with the transfer and the formation of the Japanese Company including duty, Government fees, legal and incidental expenses, etc., amounted approximately to Yen 11,000. This, for the most part, has been debited to capital account of the Japanese Company, but about Yen 2,000 had been charged to their working account and again a part has been borne by the Company.

In order to provide for this additional outlay and to reduce the already heavy overdraft with the General Managers, it was deemed advisable to call up the balance of the capital of this Company.

A final call of \$3 per share was accordingly made in April last, and was well responded to, although 795 shares (mostly Chinese whose present addresses cannot be traced) are still unpaid and liable to be forfeited.

The working account of the Japanese Company covers a period of only about four and a half months' actual working, and, although charged with a good deal of extraordinary expenditure which will not occur again, shows a small profit of some Yen 1,939.22, which is carried forward to the current half-year.

The trawler account now disappears entirely from the balance sheet and the asset is replaced by scrip in the Nisshin Gogyo Kabushiki Kaisha to the face value of Yen 105,000.

A book profit of \$7,891.31 was made on the sale of the trawler to the Japanese Company, but, in spite of the fact that the earning capacity of the trawler has been increased the General Managers and Consulting Committee deemed it prudent to write down the value of the Japanese shares to \$90,000, thereby increasing the debit at profit and loss account to \$59,566.98.

The General Managers' Commission and Consulting Committee's fees are again waived.

Ewo Cotton Spinning and Weaving Co., Ltd.—The consulting committee of this company decided that the shareholders should be recommended to apportion the balance at credit of profit and loss account on October 31, 1913, of Tls. 564,753.22, as follows:—

To pay a dividend on the preference shares at the rate of 7 per cent. per annum, absorbing Tls. 28,000.00; pay a dividend of Tls. 15 per share on 15,000 ordinary shares, absorbing Tls. 225,000.00; write off plant and machinery Tls. 60,000.00; write off buildings Tls. 12,000.-

00; write off furniture Tls. 500.00; pay a bonus to staff at mills Tls. 5,000.00; place to equalization of dividend Tls. 100,000.00; place to reserve fund Tls. 125,000.00 and carry forward to new account Tls. 9,252.22.

Japan-China S. S. Co.—The semi-annual general meeting of the Japan-China S. S. Company was held recently and the terms profits were disposed of in the following manner:—

	Yen.
Brought over from last account.	299,208.56
Net profits	494,259.14
	793,468.13
Legal reserve	24,712.98
Dividend Equalization fund ..	300,000.00
Dividend at 9 per cent.	364,500.00
Bonuses for officials	24,712.98
Carried forward to next account	79,542.17

Nippon Yusen Kaisha.—The accounts for the half year are as follow:—

	Yen.
Brought over from last account ..	881,891.06
Net profits for the term	2,884,898.89

Total 3,766,789.36
The latter amount is to be disposed of in the following manner:—

Reserve fund	144,244.94
Fund for the extension of the company's operations and the improvement of the company's fleet ..	700,000.00
Construction funds	500,000.00
Special reserve fund	300,000.00
Fees for directors and auditors ..	73,555.00
Dividend at 10 per cent.	1,100,000.00
Carried forward to next account ..	948,989.92

Chinese Engineering and Mining Co. Ltd.—The annual general meeting of the shareholders of the Chinese Engineering and Mining Company, Ltd., was held in London on December 5, when the directors' report and statement of accounts for the year ended June 30, 1913, were to be submitted. The following are extracts from the directors' report:—

The net result of the year's transactions shows a balance to the credit of profit and loss account of £85,854 made up as follows:—

	£
Proportion of Kailan Mining Administration's profit, less sundry expenses ..	99,977
Interest	4,648
Agency fees	4,000
Sundry receipts	1,110
Total	£109,735

DEDUCT.	
Expenses in Europe	7,002
Directors' fees	3,843
Income-tax	7,079
Preliminary expenses	5,957
	23,881

leaving a net balance of £85,854
which the directors recommended should be appropriated as follows:—

	£
Interim dividend 3½ per cent. paid May 15, 1913, absorbed	35,000
Final dividend 4½ per cent. (making 8 per cent. for the year)	45,000
Balance carried forward	5,854
	85,854

Yokohama Electric Co.—The profit and loss account for the last term was as follows:—

	Yen
Net profits for the term	416,254.80
Brought over from last account ..	10,569.37
Total	435,824.17
To be distributed:—	
Legal reserve	21,000.00
Sinking fund for fixed capital ..	40,000.00
Dividend reserve	30,000.00
Bonuses	33,300.00
Dividend at 11 per cent	290,880.00
Carried forward to next account ..	20,644.16

Tokyo Stock Exchange.—The profit and loss account showed that the net profits for the term, plus amount brought over from last account, was Y. 449,712.39. This amount was to be disposed of as follows:—

	Yen
Legal reserve	22,460.09
Sinking fund for construction expenses	4,000.00
Dividend at 10.4 per cent	416,000.00
Carried forward to next account ..	7,252.39

Fuji Gassed Spinning Co.—The profit and loss account for the last term was as follows:—

	Yen
Gross earnings for the term	1,292,617.75
Sinking fund for fixed capital ..	132,045.00
Consolation allowance for Mr. Hibiya, ex-president of the company	100,000.00
Balance (net profits for the term) ..	1,060,572.75
Brought over from last account ..	883,123.86

Total 1,943,696.62
This latter amount is to be disposed of in the following manner:—

Legal reserve	53,028.00
Loss reserve	53,028.00
Bonuses for operatives, and fund for the amelioration of the condition of operatives	53,028.00
Bonuses for employees, pension reserve, and fees for directors and auditors	53,030.00
Dividend at 12 per cent	720,000.00
Carried forward to next account ..	958,556.62

International Cotton Manufacturing Co., Ltd.—The report for the year ended September 30, 1913, stated that the balance at credit of profit and loss account amounted to Tls. 262,167.70, which the Directors recommended be apportioned as follows:—

To write off for Depreciation:		
Spinning Dept.—	Tls.	Tls.
Buildings	3,519.84	
Plant and Machinery	31,066.13	
		34,585.97
Weaving Dept.—		
Buildings	1,008.41	
Plant and Machinery	5,365.40	
		6,463.81
Village Account—		
Buildings	2,063.15	
Furniture Account	1,887.07	
		3,950.22
To pay a Dividend of 10 per cent. plus a Bonus of Tls. 2½ or Tls. 10 per share on 8,384 Ordinary Shares ..	83,840.00	
7 per cent. on Preference Shares	4,733.98	
		88,573.98
To place to Reserve		25,000.00
To place to Equalisation of Dividend Fund ..		75,000.00
Carry to New Account		28,593.72
		Tls. 262,167.70

LIGHT AND POWER

Electric Plant for Szechuan.—It is reported that the Siemens China Electric Engineering Company has obtained a contract to instal an electric power plant at the salt-mining town of Tseliutsing, over a hundred miles west of Chungking. This will probably be the farthest point in inland China to which electric power will have penetrated.

The plant is to be run by steam, and it is said that the coal from the surrounding district is eminently suitable for power production. Five-thousand volt machinery is to be installed.

The electricity will be used for winning the salt from the wells, which have a depth of 2,000 feet. At present the salt is raised in buckets and is carried from the wells by mules.

With the electric power it is estimated that it will be possible to take as much salt away in an hour as is now taken in a day. The scheme is being financed by the Tung Ming salt company of Tseliutsing.

Changchun Electricity Works.—The *Manchuria Daily News* reports that these works have had a run of thriving business. The lighting service reached 10,000 lamps at the end of last September. The foundation work was started in the summer of 1909. By December of that year the work had progressed far enough to serve light experimentally, when a fire broke out and retarded the progress of work for about a month. The Changchun Works were opened to business on February 1st, 1910, with the service of only 2,318 lamps. The number increased to 8,357 at the end of that year, to 9,330 at the end of 1912, and further to 10,123 at the end of last September. This increasing tendency is still operating steadily.

New Enterprises.—The work of erecting the poles for the Wuchang Electric Works, it is expected, will be commenced in another two months. In the meantime the foundations for the station have been laid and the walls of the buildings are beginning to rise. Throughout the city are posted proclamations issued by the Wuchang government informing the people that they may expect the erection of the overhead wiring very shortly. They are ordered to aid the workers in every way and not to hinder the placing of the poles, as the company has full right to put them where they like. The contract for the erection of this plant was given to Siemens China Electric Engineering Company, and it will be one of the most modern in China. The installation will be completed about the end of next year.

Unlike the Hankow Waterworks the new Wuchang waterworks is to be entirely electric-powered, the power being obtained from the same plant as the light. The waterworks is to be situated on Chang Chih-tung's concession below the city, and the water is to be taken from the river. Now that permission for the erection of the plant has been obtained from both provincial and central governments, Mr. M. Engel, from the Shanghai Waterworks Company, who has obtained the contract, is starting work this year, and it is expected that the city will have water laid on in about a year's time. The replacing of steam by electric power will both cheapen the initial price of the plant by some Tls. 10,000 and will cut down the land required to a minimum. The running expenses are estimated to compare very favourably with those of steam, as the Wuchang Electric Light Company on account of supplying on a large scale, will be able to supply power at a cheap rate.

Hanyang Arsenal is to be fitted, we are informed, with the most modern electric plant in China. The contract for the electric machinery has been given to Siemens China Electric Engineering Company. The notable feature of the new plant will be the steam turbine driven dynamos. The power manufactured will drive motors as well as light the place. The whole arsenal is to be electric-powered. The plant will be a high-tension one of 3,000 volts. In consequence of dissatisfaction with Yangtse water in condensers in the several plants along the river banks, the necessity of this will be avoided in the Hanyang works by a water cooling tower.

Part of the electrical machinery has already arrived out. The plans of the power house have already been drawn up and the work of erecting is to commence at once.

Forty thousand taels is about the contract price for the installation of the electric power plant at the salt mining town of Tseliutsing, in Szechuan, as reported elsewhere. The plant is to be three phase generators developing 5,000 volts. The high tension is required to transmit the power over considerable distances to neighbouring towns and in the salt mining operations. The town of Tseliutsing is to be lit throughout with electricity, the power for local require-

ments being transformed to 220 volts. The machinery is now on its way out, and The Siemens China Electric Engineering Company, who obtained the contract, expect to send their electrician to Tseliutsing shortly.

In connection with this plant it is interesting to know that another in Chengtu, further inland, was also erected by the same firm and is at present working.

The Changsha electric plant has proved inadequate for the demand, and an extension has been put to it by the Siemens Company. The extension generates above 300 horse power.

Kobe Electric Company.—The working of the Kobe Electric Company for the last half-year was quite satisfactory, and the company is able to pay a dividend of more than 6 per cent. per annum, but the dividend will be limited to that figure, more money being put to the reserve fund and carried forward in order to strengthen the foundation of the company. It is stated that the company has on foot a scheme to raise a foreign loan or to negotiate a temporary loan in order to obtain the funds required for carrying out the proposed extension of the tramway system.

Philippine General Electric Co.—In order to extend the business in the products of the General Electric Company of Schenectady, in the Philippines a company called the Philippine General Electric Company has been incorporated with a capital of Pesos 100,000.00, divided into 1,000 shares of Pesos 100 each.

The main shareholders in the new company are The Frank L. Strong Machinery Company and the Pacific Commercial Company, who are the two largest machinery importers into the Islands. The business of the General Electric Company has in the past been exclusively handled by the Frank L. Strong Machinery Company, but owing to its rapid growth in recent years the need of additional capital to work this branch has been felt. The General Electric Company are not financially interested in the new company which will be a purely local concern. The articles of association have been very liberally drawn so as to permit of the Company engaging in all branches of the electrical field.

The first directors of the Philippine General Electric Co. are F. L. Strong, J. M. Switzer, R. E. Clark, D. R. Williams, F. A. Leas, and E. B. Bruce.

MINING

Kailan Mining Administration.—The Kailan Mining Administration's total output for the week ended November 8 amounted to 49,219.16 tons and the sales during the same period to 39,769.44 tons.

Week ended November 15, output 48,957.34 tons, sales 42,763.82 tons.

Week ended November 22, output 50,907.59 tons, sales 44,218.57 tons.

Week ended November 29, output 52,811.43 tons, sales 57,389.58 tons.

Copper Mine in Kiangsi.—Mining work has been started by Mr. Liu Sin-sen, comprador of the Banque de l'Indo-Chine, on a copper mine which he bought last year at a place called Changloyuan on the Kiangsi border, says the "C. C. Post." Some 150 ft. has been already excavated, and it is expected that the workers will strike ore when the shaft is sunk another 100 ft. According to present arrangements, when it is proved the mine is genuine, shares will be floated on the market and the mine properly developed.

Mineral Output in Japan.—According to the Department of Agriculture and Commerce

the yield of principal minerals in Japan witnessed a falling off by $\frac{1}{2}$ per cent. as compared with the same time last year during October last, the details being given below:—

Gold	120,618	momme.
Silver	2,939,217	"
Copper	9,312,319	kin."
Iron	1,521,850	kwan.
Coal	4,592,100	tons.
Petroleum oil	131,649	koku.
Sulphur	7,990,692	kin.

The figures for the ten months ending October '31st also show a falling-off by $\frac{1}{2}$ per cent. as compared with the same period of last year. Details are as under:—

Gold	1,032,947	momme.
Silver	32,513,862	"
Copper	82,469,284	kin."
Iron	14,421,343	kwan.
Coal	15,234,127	tons.
Petroleum oil	1,288,130	koku.
Sulphur	69,478,136	kin.

Hupei Coal Mine.—The *Central China Post* reports that samples of anthracite coal apparently of very fine quality, have arrived in Hankow from a new mine opened three hundred and eighty li up the river from Hankow. The Ing Mow Wai Coal Mine, as the mine is called, is expected to be got into working order about March next year, when a turnout of between seven hundred and eight hundred tons a month is predicted. The borings have already struck a three-foot seam of hard coal, we are informed, and the first shipment is expected to arrive at Hankow shortly.

The Ing Mow Wai coal mining concession was granted to some wealthy Chinese from the North in 1908. Preliminary machinery for boring was installed, the contract for which was given to the local firm of Messrs. Burtenshaw and Company, the value being about Tls 11,300. The work of boring was immediately started upon, but on the death of one of the principals in December 1909 the other partners gave over the work and the concession was taken over by Messrs. Burtenshaw and Company. Further machinery to carry out the boring in a more extensive scale was brought out, but in 1911 the revolution put a stop to the erection work. However, as soon as conditions quietened down, the work was again taken up under the supervision of a German engineer.

Two shafts have now been sunk, one to a depth of sixty-four feet and the other to about forty-eight feet. A seam of hard anthracite about 3 ft. 2 in. in breadth has been struck in the deeper shaft. The intention is to incline the first shaft to a depth of between one hundred and seventy or eighty feet and sink another, a third shaft.

The plant at the mine head is said to be on modern lines. Anthracite being of little or no use as a steam producer, power is to be obtained from suction gas engines, which will develop electricity. This will be employed not only in working the mine machinery but will light the mine. In all some hundred and eighty-five glow lamps and eighteen arc lamps are to be installed. The danger from flooding is believed to be remote, as the mine is in hill country, but as an emergency and to contend with water from tapped springs there are two electric-driven centrifugal pumps, which have a capacity of five hundred and eighty gallons a minute against a head of 420 feet.

The mine being inland from the Yangtse, there is the drawback of adequate transport facilities, but arrangements are under way for a small railway from the mine mouth to the river's edge. From there the coal will be transported to Hankow in boats. Messrs. Burtenshaw and Company have arranged for an agency in Shanghai.

The quality of the coal, by the samples, is more of the household variety. It is said to be free from sulphur and carbon dioxide. The price, it is expected, will compare favourably with that of coal already on the Hankow market.

PERSONAL

Sir John Jordan, British Minister at Peking, presented his credentials to President Yuan Shih-kai on December 4.

Mr. J. A. Thomas, managing director of the British-American Tobacco Company, has received the 6th grade of the Chia Ho Order for services rendered to the Chinese Government.

Mr. Frank W. Carpenter has been appointed Governor of Moro Province, Philippine Islands.

Mr. Richard Wood Randolph has been appointed acting Engineer-in-Chief of the Ichang-Kweichow section of the Hankow Szechuan Railway.

Mr. G. C. Hanson, in the American Consular service, now at Chefoo, is to succeed Mr. A. W. Pontius as American Consul at Dairen. Mr. Pontius has been appointed Consul at Nanking.

Mr. Ryutare Nomura, Vice-President of the Japanese Railway Board, and Mr. Daihachi Ito, a Seiyukai member of the House of Representatives, have been appointed President and Vice-President, respectively, of the South Manchuria Railway.

Mr. W. T. Price, headmaster of the Thomas Hanbury School at Shanghai, has been appointed headmaster of the Customs College in Peking.

The President has appointed General Chang Hsun Inspecting Commissioner on the Yangtze and General Feng Kuo-chang Tutuh of Kiangsu.

In response to the application of Vice-Admiral Li, at Shanghai, the President has sanctioned the installation of wireless telegraphy on twelve men-of-war. Vice-Admiral Li has now asked for permission to instal apparatus on other ships.

The Amur Railway has been opened to Blagovestchensk.

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Paints Oils and Varnish

Standard Oil
Albany Lubricating Co.
F. A. Vander Loo & Co.
J. Dampney & Co.

Packings

F. Reddaway & Co.
Greene Tweed & Co.

Pulleys (Steel)

Schuchardt & Schutte
Shanghai Machine Co.
Shanghai Dock & Engineering Co., Ltd.

Pumps

The Goulds Manufacturing Co.
Shewan, Tomes & Co.
Jardine, Matheson & Co.
Shanghai Machine Co.
Shanghai Dock & Engineering Co., Ltd.
Joseph Evans & Sons

Railroads

Chinese Government Railways
Manila Railroad Co.
South Manchuria
Southern Pacific Co.
Chosen (Korea) Railways.

Railroad Supplies

American Trading Co.
American Locomotive Co.
Andersen, Meyer & Co.
Arnhold, Karberg & Co.
Baldwin Locomotive Work.
Fearon, Daniel & Co.
Hannoversche Maschinenbau A. G. Vormalis
Georg Egestorff.
Henschel & Sohn.
P. Herbrand & Co.
Jardine, Matheson & Co., Ltd.
Melchers & Co.
Mitsui Bussan Kaisha
Shewan, Tomes & Co.
Shanghai Machine Co.
Shanghai Dock & Engineering Co., Ltd.
Tyler & Co.
U. S. Steel Products Co.

Railway Signal Co., Ltd., The

Robert Dollar Co.

Samuel & Co., Ltd.

Dick, Kerr & Co., Ltd.

Avonside Engine Co., Ltd.

Siemssen & Co.

T. H. Symington Co.

Reinforced Concrete Construction

Shanghai Dock & Engineering Co., Ltd.

Trussed Concrete Steel Co.

U. S. Steel Products Co.

Roofing Paper

California Manila Lumber Commercial Co

Rope Manufacturers

Johnson-Pickett Rope Co.

U. S. Steel Products Co.

Ynchausti & Co.

Shewan Tomes & Co.

Ship-Chandlery

Ynchausti & Co.

Shipping Agents

Cia. General de Tabacos

Shewan, Tomes & Co.

Stevenson & Co., Ltd.

Shipbuilding and Repairs

Fiat-san Giorgio Ltd.

Tsingtau Werft

Hongkong & Whampoa Dock Co., Ltd.

Kiangnan Dock and Engineering Co., Ltd.

Mitsu Bishi Dock and Engineering Works

Shanghai Dock and Engineering Co., Ltd.

Smith's Dock Co., Ltd.

The Taikoo Dockyard and Engineering Com-
pany of Hongkong, Limited

William Cramp & Sons.

Steamship Companies

Cia. General de Tabacos

Pacific Mail S. S. Co.

Ynchausti & Co.

Toyo Kisen Kaisha.

Steel Manufacturers

United States Steel Products Export Co

Steel Works

Bohler Bros. & Co., Ltd.

U. S. Steel Products Co.

Stokers

Babcock & Wilcox Ltd.

Structural Steel

Bohler Bros. & Co.

Shanghai Dock & Engineering Co., Ltd.

U. S. Steel Products Co.

Sugar Machinery

Honolulu Iron Works.

A. F. Craig & Co.

Superheaters

Babcock & Wilcox Ltd.

Tanks

Pacific Tank and Pipe Co.

Shanghai Dock & Engineering Co., Ltd.

U. S. Steel Products Co.

A. F. Craig & Co.

Telephones

The Western Electric Co.

Textile Machinery

A. F. Craig & Co.

Tiles and Bricks

Green Island Cement Co., Ltd.

Chinese Eng. Mining Co.

Tobacco Dealers

British-American Tobacco Co., Ltd.

Cia. General de Tabacos

Olsen & Co., Walter E.

Tools

American Tool Works Co.

Lodge & Shipley Machine Tool Co.

Shanghai Machine Co.

Easterbrook Allcard & Co., Ltd.

The Selson Engineering Co., Ltd.

Shanghai Dock & Engineering Co., Ltd.

Windmills

Defiance Machine Works.

Water Softeners

Babcock & Wilcox Ltd.

Wood Working Machinery

American Tool Works Co.

Defiance Machine Works.